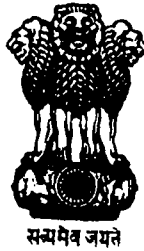


GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDU



R E P O R T
OF THE
T A R I F F C O M M I S S I O N
ON THE
A U T O M O B I L E I N D U S T R Y

BOMBAY
1953

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GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY

RESOLUTION
(Tariffs)

New Delhi, the 31st May, 1953.

No.21(1)-TB/52.- By two Resolutions dated the 29th March 1952 and the 27th May, respectively, the Government of India in the Ministry of Commerce and Industry had asked the Tariff Commission to enquire into and recommend suitable measures for the development of the Automobile Industry in India. The services of a technical expert from Germany were made available to the Commission for this enquiry. The Commission submitted its report on the 25th April 1953. The main conclusions and recommendations of the Commission are briefly summarised below:-

(1) The chief obstacle in the way of the speedy development of the Automobile Industry is the comparative smallness of the annual demand which has been, during the last four years, less than 20,000 vehicles of all types and categories. It is, therefore, extremely important to take steps to enlarge the volume of demand and for this there is great scope specially in regard to commercial vehicles. There are far fewer vehicles per 100,000 of the population in India than in most other countries of the world, including countries in South East Asia. Both for developing the transport system of the country and for encouraging the Automobile Industry it would be desirable to stimulate the demand for vehicles. For this purpose the Commission has suggested that Government should implement the recommendations of the Motor Vehicles Taxation Enquiry Committee. The Commission has also come to the conclusion that the present high rates of import duty - 94½% on certain components manufactured or expected to be manufactured in the country, 63% and 31½% on other components - far from helping the Automobile Industry, have had the effect of raising the price of motor vehicles to the consumer. The Commission has, therefore, recommended that the import duty on all components should be reduced to a flat rate of 40 per cent *ad valorem*.

(2) The Commission has recommended that, simultaneously with steps to increase demand, the existing demand should be concentrated on firms with an approved manufacturing programme. There exist at present twelve firms with a total assembly capacity for over 84,000 vehicles. Of these, only five firms have a manufacturing programme and among them only Hindustan Motors, Ltd., have made "comprehensive and substantial progress" towards the manufacture of major components. The Commission has recommended that future demand should be concentrated on these five firms, and the assembly operations of those without a manufacturing programme should cease within a period of three years.

(ii)

(3) In order to concentrate demand on the five firms with a manufacturing programme and to provide for the progressive manufacture of the types of vehicles required by the country, the Commission has suggested a plan of manufacture of various types by different firms and a programme of progressive manufacture of these types. Briefly the plan is as follows:-

- (a) Hindustan Motors, Ltd., will manufacture a light car, a big car and a medium truck.
- (b) Premier Automobiles, Ltd., will manufacture a big car and a medium truck.
- (c) Automobile Products of India, Ltd., will manufacture a light car and a medium truck.
- (d) Standard Motor Products of India, Ltd., will manufacture a medium car only.
- (e) Ashok Motors, Ltd., will concentrate on a heavy truck and a baby car, if a suitable scheme is put forward by them.

(4) The Commission has also suggested a scheme of progressive manufacture of components during the next five years. It has also suggested the actual scale of manufacture of each model from year to year, and the allocation of foreign exchange in accordance with that scale.

(5) The Commission does not consider that any of the five manufacturers is likely to make jeep-type vehicles. It has recommended that, for the present, the requirements of jeeps, both Civil and Military, should be met by the existing assemblers of jeep-type vehicles.

(6) Regarding diesel vehicles, the Commission has come to the conclusion that, on balance, they are more suitable for heavy transport and that the manufacture of a five-ton diesel vehicle should be encouraged, but that no diesel vehicles of lower tonnage should be allowed to be manufactured.

The Government have, after careful consideration of the report of the Commission, come to the following conclusions:

(1) The Government agree that for the quick development of the Automobile Industry it is essential to encourage the greater use of vehicles by bringing prices down. The Government accept the view that the present high rates of duty have not helped the industry but have, on the other hand, inhibited demand. The Government, therefore, agree with the Commission that the rate of import duty should be lowered. They consider, however, that a flat rate of duty on all components may not be conducive to the manufacture of new components. After careful consideration the Government have come to the conclusion that the best course would be to aim at an average level of approximately 40 per cent on a complete CKD pack as recommended by the Commission, but to maintain at a some-

(iii)

what higher level the rates on components within the manufacturing programme. The necessary notifications giving effect to this decision are being published.

(2) The Government agree with the Commission that the present system of taxation of road transport by different authorities at different rates - sometimes very high - has been a powerful factor in reducing the demand for vehicles, particularly for transport vehicles. Any change in this requires discussion with the State Governments. The Government of India propose to examine this question further in consultation with the State Governments in order to evolve a system of taxation which will be conducive to the development of motor transport.

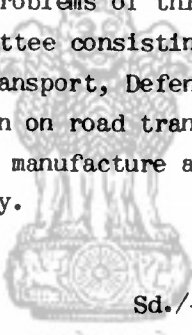
(3) The Government of India accept the conclusion of the Commission that the demand for vehicles in the country should be concentrated on firms with a manufacturing programme. There will, therefore, be no scope for pure assembling work being conducted on an economic scale for any length of time. The Government propose, after consulting the firms concerned, to formulate a programme for them in the light of these developments and to examine what arrangements could be made for finding alternative employment for the labour and, if possible, for the capital equipment, now utilised by the assembling plants. The intention is that within a period of three years these firms would cease their assembly operations and concentrate on the other activities still open to them - not the least important of which is the maintenance and servicing of the vehicles on the road. Indeed Government would take this opportunity to draw the attention of the firms with a manufacturing programme to the importance of providing adequate servicing facilities, in the absence of which Government would find it difficult to continue the help and encouragement which they might otherwise deserve.

(4) Government generally accept the recommendations of the Commission regarding the types of vehicles to be manufactured and the firms which should undertake such manufacture. They consider, however, that the manufacture of baby cars need not necessarily be confined to one of the five approved manufacturers. They will be prepared to consider a programme of manufacture from any of the five firms if such a programme is submitted before September 1953.

(5) In regard to diesel vehicles, the Government doubt whether any firm would find it economical to manufacture five-ton vehicles only. They would, therefore, be prepared to consider on merits any concrete plan of manufacture which would include, beside the five-ton diesel trucks, engines for lighter vehicles and, possibly, a light or medium vehicle of a type not included in the manufacturing programmes of the five units. This would enable the manufacture of commercial vehicles to utilise Indian-made diesel engines, should their customers so desire.

(6) The Commission has suggested a detailed programme of progressive manufacture for each of the five firms and has recommended allocations of foreign exchange for specified numbers of vehicles for each of the next five years. While agreeing to the idea of such a programme, Government consider that there should be some degree of flexibility, both as regards the pace of progress and as regards the number of vehicles for which components could be imported every year. This is further necessary in order to ensure a fair degree of competition among the manufacturers themselves.

Apart from the major recommendations dealt with in the preceding paragraph, the Commission has made various suggestions on other points such as the need to develop ancillary industries, the establishment of a Development Council for the Automobile Industry, the importance of greater co-operation between the manufacturing firms, etc. Government are in general agreement with the basic ideas underlying these recommendations and would take necessary action to implement them as far as possible. Government consider it necessary to provide for standing machinery to deal with the problems of this important industry. They have decided to set up an *ad hoc* committee consisting of representatives of the Ministries of Commerce & Industry, Transport, Defence and Finance. The committee will also examine problems of taxation on road transport and other incentives to secure the speedy development of manufacture and the general expansion of road transport services in the country.



Sd./- S. Bhoothalingam,

Joint Secretary to the Government of India.

(v)

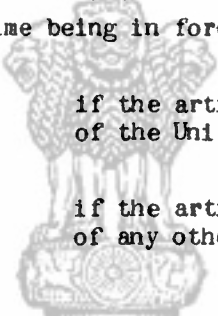
GOVERNMENT OF INDIA
MINISTRY OF COMMERCE & INDUSTRY

NOTIFICATION
(Tariffs)

New Delhi, the 31st May, 1953.

No. 21(1)-T.B./52.- In exercise of the powers conferred by Section 34 of the Indian Tariff Act, 1934 (XXXII of 1934), the Central Government hereby raises the customs duty on body panels including turret tops and sides for passenger cars leviable under item 75(11) of the First Schedule to the said Act and any other law for the time being in force to -

37 per cent <i>ad valorem</i>	-	if the article is the manufacture of the United Kingdom.
40 per cent <i>ad valorem</i>	-	if the article is the manufacture of any other country.


सत्यमेव जयते
Sd./- S. Bhoothalingam,
Joint Secretary to the Government of India.

(vi)

GOVERNMENT OF INDIA
MINISTRY OF FINANCE (REVENUE DIVISION)

NOTIFICATION
(Customs)

New Delhi, dated the 31st May, 1953.

No. 41.- In exercise of the powers conferred by Section 23 of the Sea Customs Act, 1878 (VIII of 1878), the Central Government hereby exempts the articles and parts thereof adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters, (except body panels including turret tops and sides for passenger cars), falling under items 75(9), 75(10), 75(11) and 75(12) of the First Schedule to the Indian Tariff Act, 1934 (XXXII of 1934) -

- (a) from so much of the Customs duty leviable thereon under the said items as is in excess of the rates specified in columns 3 and 4 of the Schedule hereto annexed; and
- (b) from the whole of the additional duty of Customs leviable thereon under Section 5 of the Finance Act, 1953 (14 of 1953).

SCHEDULE			
Sl. No.	Item No.	Standard rate of duty.	Preferential rate of duty if the article is the manufacture of the United Kingdom.
1	2	3	4
1.	75(9)	50 per cent <i>ad valorem.</i>	47 per cent <i>ad valorem.</i>
2.	75(10)	50 per cent <i>ad valorem.</i>	47 per cent <i>ad valorem.</i>
3.	75(11) except body panels including turret tops and sides for passenger cars.	25 per cent <i>ad valorem.</i>	22 per cent <i>ad valorem.</i>
4.	75(12)	25 per cent <i>ad valorem.</i>	22 per cent <i>ad valorem.</i>

Sd./- E. Rajaram Rao,
Joint Secretary to the Government of India.

(vii)

GOVERNMENT OF INDIA
MINISTRY OF FINANCE (REVENUE DIVISION)

NOTIFICATION
(Customs)

New Delhi, the 31st May, 1953.

No. 42. - In exercise of the powers conferred by Section 23 of the Sea Customs Act, 1878 (VIII of 1878), and in supersession of the notification of the Government of India in the Ministry of Finance (Revenue Division) No. 49 - Customs, dated the 19th May, 1951, the Central Government hereby exempts the articles and parts thereof adapted for use as parts and accessories of motor vehicles, other than motor cycles and motor scooters, falling under items Nos. 75(9), 75(10), 75(11) and 75(12) of the First Schedule to the Indian Tariff Act, 1934 (XXXII of 1934), if the manufacture of the United Kingdom, from so much of the customs duty leviable under the said items as is in excess of the rates specified in column 3 of the Schedule below :

Provided that the said articles are not also adapted for use as parts and accessories of motor cars including taxi cabs.

SCHEDULE नयन

Serial No.	Item No.	Reduced preferential rate.
(1)	(2)	(3)
1.	75(9)	42½ per cent <i>ad valorem</i>
2.	75(10)	42½ per cent <i>ad valorem</i>
3.	75(11)	17½ per cent <i>ad valorem</i>
4.	75(12)	17½ per cent <i>ad valorem</i>

Sd./- E. Rajaram Rao,
Joint Secretary to the Govt. of India.

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REPORT ON THE AUTOMOBILE INDUSTRY IN INDIA

CHAPTER I - INTRODUCTORY

The importance of establishing an automobile industry was recognised by the Government of India in 1945 when a Panel on Automobiles and Tractors was constituted to make recommendations on the development of manufacture of automobiles and tractors in India. In their Report submitted in 1947 the Panel recommended (i) the grant of local facilities in the matter of land acquisition, power and water, etc., to national concerns undertaking manufacture of automobiles in India, (ii) free exchange facilities for the importation of efficient and up to date machinery by such concerns, (iii) duty-free import of raw materials, certain forgings, castings, etc., machinery and capital equipment by the concerns, (iv) adoption of the principle of a graduated differential in customs duties levied on various individual components, the differential to depend on the time required to establish manufacture in India, and (v) other measures of assistance such as grant of bounties and subsidies. In the Statement of Industrial Policy made in the Indian Parliament on 6th April, 1948, automobiles and tractors were classified among those industries of importance which would be subject to regulation and control by the Central Government. In 1949, Government decided that import of motor vehicles should be allowed only in c.k.d. (completely knocked down) condition, though in a few special cases built-up vehicles were also allowed and in the case of one assembler permission was given to import vehicles in s.k.d. (semi-knocked down) condition for one more year. At the same time, further increase in assembling capacity beyond what was in existence prior to 1948 was not encouraged. From 1st April, 1950, customs duty on certain parts which were being manufactured in the country and which were likely to be manufactured in the course of the next two years was raised, pending an inquiry into the question of grant of protection and assistance to the industry. In pursuance of an assurance given by Government during the course of the debate in Parliament in March, 1950, an Automobile Expert Committee was appointed in June, 1950, to examine the position in regard to the inclusion of particular parts of automobiles in categories bearing different rates of import duty and to make recommendations for their re-classification. The revised classification recommended by the Committee was accepted and given effect to by Government in March, 1951.

Certain other measures were also taken to promote the development of the industry. For effective standardisation of types and models of vehicles to be imported into the country, restriction was imposed on the assemblers requiring them to import only three types of cars and trucks from each of the dollar and soft currency areas. Assemblers were also informed by the Ministry of Industry and Supply in May, 1950 that after 1950 automobile firms not having a manufacturing programme would not be considered for allocation of foreign exchange for the import of motor cars and trucks. This date was subsequently extended to the end of 1952. A small weightage in the matter of exchange allocation for the import of motor vehicles was given to Hindustan Motors Ltd., and Premier Automobiles Ltd., in 1951, in recognition of the progress in manufacturing operations made by them. In January-June, 1952, further encouragement was given to these two concerns by reducing the exchange allocation to pure assemblers to the extent of 20 per cent and distributing the resultant saving among the two concerns as an additional allocation. Orders were also placed after 1949 with Hindustan Motors Ltd., and Premier Automobiles Ltd., for supply of Studebaker and Dodge trucks respectively, to meet defence requirements.

All these measures were not deemed sufficient by Hindustan Motors Ltd., who represented that the imports already effected by the various assemblers and the stocks in the country, coupled with a fall in demand, had led to a reduction in sales of their cars and that they were faced with the prospect of closure of their factory. Owing to shrinkage in sales and accumulation of stocks, the factory of Hindustan Motors Ltd., remained closed from April, 1952 to July, 1952. Government, after reviewing the position in regard to stocks and expected arrivals against outstanding licences, decided that, of the licences issued for January-June, 1952 to the assemblers, import upto only two-thirds of the face value would be allowed before the end of June, 1952. Restrictions were also placed on the import of cars on 'home delivery' basis from the soft currency areas. No imports of automobiles were allowed in July-December, 1952 except in the case of Mahindra and Mahindra Ltd., and Dewar's Garage and Engineering Works on a restricted basis.

2. By their Resolution No. I-T/(5)/52, dated 29th March, 1952, the Government of India in the Ministry of Commerce and Industry referred to the Tariff

Reference to the Commission.	Commission for inquiry and report the question of the grant of protection or assistance for the encouragement of the automobile industry in India. Subsequently, by their Resolution No. I-T(5)/52, dated 27th May, 1952, they indicated, in the following terms, some of the more important points on which they would specially like the Commission to advise :-
---------------------------------	--

"The Commission is accordingly requested to make a thorough technical and such other examination as it may consider proper and to recommend measures necessary to protect, assist and facilitate the speedy growth of the automobile industry in India on a sound basis. In particular,

- (1) To examine the manufacturing programmes (present and proposed) of Hindustan Motors and Premier Automobiles as well as of the industries engaged in the production of essential components for these units and report whether they are technically sound and their implementation would result in the manufacture of vehicles at a price which would permit of an expanding demand and if so, by what date;
- (2) To examine and report on the possibilities of either integration or mutual assistance and co-operation of existing manufacturers/assemblers of motor vehicles with a view to utilising the total existing capacity to the best advantage and promoting the development of the automobile industry as a whole;
- (3) To examine and report on the steps necessary to encourage the growth of ancillary industries;
- (4) To examine and report on the arrangements for the import of vehicles, accessories and raw materials necessary to meet the requirements of the industry and the public;
- (5) To examine and report whether any change in the existing rates of import duty on components of motor vehicles is required and, if so, in what respect; or whether the grant of a subsidy would be suitable and, if so, what conditions should be attached to it; or whether a combination of both these methods should be adopted;
- (6) To investigate and report on the economics of diesel-driven transport vehicles and the desirability of taking measures to restrict, regulate or co-ordinate their use with the use of petrol-driven vehicles."

The Resolutions have been reproduced in Appendix I.

3. (a) On 22nd May, 1952, the 12 manufacturers and assemblers mentioned in paragraph 6(b) below were invited to forward to the Commission comprehensive memoranda giving details of their capacity, actual production, phased expansion of production programme, nature, scope and broad terms of agreement for collaboration or partnership with foreign manufacturers, position in regard to supply of raw materials and development of indigenous sources of supply, production and quality of components manufactured and views on the claim of the industry to protection or assistance as well as any other measures which should be taken by Government to encourage the development of the industry. Similar memoranda were invited on 10th June, 1952, from all the known manufacturers of automobile components and parts and other ancillary manufacturers. A list of firms, individuals and other bodies from whom memoranda were invited is given in Appendix II. On 11th October, 1952, the Commission issued a press note inviting all those interested in the

inquiry who desired to forward their views to the Commission to make a representation in writing. A special questionnaire was also issued to Hindustan Motors Ltd., and Premier Automobiles Ltd., on 11th November, 1952.

(b) Mr. W.R. Vorwig, Secretary-General of the Association of Automobile Industry in West Germany, was appointed as an Automobile Expert to assist the Commission in its inquiry. He joined his appointment early in September, 1952. The Commission were also assisted by Colonel P.V. Subramanyam, Chief Superintendent, Technical Development Establishment (Vehicles), Ahmednagar, and Mr. P.L. Kumar, Development Officer (Mechanical), Ministry of Commerce and Industry (Development Wing), who were available for discussions in regard to technical matters through the good offices of the Ministry of Defence and the Ministry of Commerce and Industry, respectively.

(c) Mr. M.D. Bhat, Chairman of the Commission, Dr. B.V. Narayanaswamy Naidu, Mr. B.N. Adarkar and Mr. B.N. Das Gupta, Members, accompanied by Dr. D.K. Malhotra, Secretary and Mr. P.L. Kumar, Development Officer (Mechanical), visited the automobile factories and component manufacturing units located at Calcutta, Bombay and Madras during November 1952 - February 1953. Mr. Vorwig visited all the automobile factories and a large number of ancillary units, and held a series of discussions with the various representatives of the automobile industry. A list of factories visited by the Chairman and Members of the Commission, accompanied by the Secretary as well as by Mr. W.R. Vorwig and Mr. P.L. Kumar is given in Appendix III.

(d) Mr. R. Sundaram, Cost Accounts Officer and Mr. S.V. Rajan, Assistant Cost Accounts Officer, attached to the Commission, visited the factory of Hindustan Motors Ltd., Calcutta, on 11th November, 1952, and carried out cost investigation of the factory from 11th to 26th November, 1952. Mr. S.V. Rajan also visited the factory of Hoare Miller & Co. Ltd., Calcutta, on 2nd December, 1952, and carried out its cost investigation. Mr. N. Krishnan, Cost Accounts Officer, carried out cost investigation into Metropolitan Springs Ltd., Bombay, on 3rd December, 1952, into India Pistons Ltd., Madras, on 12th December, 1952, and into Union Company (Accessories) Ltd., Madras, on 18th December, 1952. Mr. L.M. Ghosh, Assistant Cost Accounts Officer, carried out cost investigation into the factory of Premier Automobiles Ltd., Bombay, from 18th to 29th November and from 1st to 12th December, 1952.

(e) A public inquiry into the industry was held on 12th, 13th and 14th January, 1953, at Bombay. Discussions were held subsequently with the representatives of the State Road Transport Organisations, motor vehicle operators, manufacturers and assemblers of automobiles, manufacturers of automobile components and parts, Ministry of Defence, Indian Roads and Transport Development

Association Ltd., Automobile Manufacturers' Employees' Association, Bombay, Airflow Transport Ltd., Society of Motor Manufacturers and Traders, U.K., and Austin Export Corporation, U.K. The programme of the inquiry together with a list of persons who attended the public inquiry and the interests represented by them is given in Appendix IV.

4. We have briefly set out in this chapter the origin and terms of reference of the present inquiry. In Chapter II, we have included a short account of the development of the industry in India and have given in some detail the principal facts pertaining to the present position of the main industry and the ancillary industries as well as their manufacturing programmes. Chapter III is devoted to a detailed examination of the various problems of the industry including those which have been specifically referred to us for investigation. Our conclusions and recommendations on the specific issues of the present inquiry have been set out in Chapter IV. Finally, in Chapter V, our conclusions and recommendations on the various matters dealt with in the Report have been summarised.



CHAPTER II - SURVEY OF THE INDUSTRY

5. It appears that the first motor car was imported into India in about 1898. There is no precise information as to how many motor vehicles were imported annually in subsequent years upto the end of the first World War, but there is evidence to show that imports of motor vehicles were not on a large scale. The practice upto the end of this period was to purchase complete motor vehicles directly from abroad or through agents or dealers in India. It was after 1920 that two automobile manufacturers, one from the U.S.A., and one from Canada, set up local companies to do business in motor cars and trucks. General Motors India Ltd., commenced assembling trucks and cars from components and parts imported from the U.S.A., in c.k.d. condition in their factory at Bombay, in 1928, while Ford Motor Company of India Ltd., commenced c.k.d. assembly of automobiles at Madras in 1930 and at Bombay and Calcutta in 1931. The assembly plants at Calcutta and Madras were, however, closed down by the Company in 1950. It is claimed by Peninsular Motor Corporation Ltd., Calcutta, that G. Mackenzie & Co., their sister company were the first to start assembling cars and trucks from c.k.d. components and parts in their workshop at Calcutta in 1926. Addison and Co. Ltd., commenced c.k.d. assembly of cars and trucks at Madras in 1936. In 1944, two companies, Hindustan Motors Ltd., Calcutta and Premier Automobiles Ltd., Bombay, with an authorised capital of Rs. 20 crores and Rs. 10 crores respectively, were established with a programme for progressive manufacture of complete automobiles. Hindustan Motors Ltd., have entered into technical collaboration with Morris Motors Ltd., U.K., for the assembly and manufacture of Hindustan 14, and with Studebaker Corporation, U.S.A., for the assembly and manufacture of their cars and trucks in India; and Premier Automobiles Ltd., with Chrysler Corporation, U.S.A., for the assembly and manufacture of Chrysler products and also with the Fiat Societa' Per Azioni of Italy for the assembly and ultimate manufacture of Fiat cars. Due to the threatened partition of the country, Hindustan Motors Ltd., could not decide upon the exact location of

their factory until June, 1947. The factory was eventually constructed at Uttarpara, near Calcutta, and operations for assembly of c.k.d. vehicles started in 1948. Simultaneously the firm installed a complete plant for the manufacture of vital automobile components, namely, engine, gear box, differential, etc., and commenced manufacture of these components with imported castings and forgings towards the end of 1950. The plant installed in this factory for the machining of engine blocks is suitable for Hindustan 14 cars only, and to undertake the machining of Studebaker engines, Hindustan Motors Ltd., have completed plans for the installation of additional equipment. Premier Automobiles Ltd., completed their factory and commenced operations of assembly of cars in March, 1947. They have a press shop, a machine shop and a forge shop and since 1949 have started manufacture of various components, such as radiators, propeller shafts, universal joints, needle bearings, leaf and cushion springs, and exhaust and tail pipes. A number of these components have been manufactured for Dodge trucks assembled by them. They have also installed a plant for the production of shock absorbers which is expected to come into operation shortly.

In addition to the above two units, Government have approved the programmes of Standard Motor Products of India Ltd., Madras, and Automobile Products of India Ltd., Bombay, for the manufacture of motor vehicles. Government have recognised Ashok Motors Ltd., Madras, as manufacturers, though no formal letter approving their manufacturing programme was issued to them. All these firms have constructed their factories and commenced assembly operations in 1949 and 1950. Of these three firms, Standard Motor Products of India Ltd., have started manufacture of some of the components, while the other two have not so far made any notable progress in their manufacturing programmes. Standard Motor Products of India Ltd., are associated with Standard Motor Co. Ltd., U.K.; Automobile Products of India Ltd., with Rootes Group in U.K.; and Ashok Motors Ltd., with Austin Motor Company Ltd., U.K. Besides these firms, five other c.k.d. vehicle assemblers were established between 1946 and 1950, namely, Dewar's Garage and Engineering Works, Calcutta; Peninsular Motor Corporation Ltd., Calcutta; French Motor Car Co. Ltd., Bombay; Mahindra and Mahindra Ltd., Bombay; and Addison & Co. Ltd., Madras.

6. (a) The Automobile industry has developed a more or less uniform pattern in all countries where it has made sufficient progress and comprises (i)

Present position of the industry.	automobile manufacturers who design, develop and produce complete automobiles, automobile chassis and spare parts and deliver them through their dealers' organisations to consumers and (ii) component manufacturers who manufacture in co-operation with the automobile factories, aggregates, components and accessories which are needed as original equipment to build motor vehicles or as spare parts to maintain them.
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In so far as the components and accessories produced by component manufacturers are used only for automobiles, the firms making them constitute the "ancillary industry", which is considered to be a part of the automobile industry. The line of demarcation between the automobile manufacturers and component manufacturers is not always well-defined. Normally, however, an automobile manufacturer should manufacture at least the main proprietary aggregates, namely, engine, transmission, and front and rear axles. Other components may be either manufactured or purchased from ancillary industries. Component manufacturers, on the other hand, normally produce those items which require special experience, research and development work, and special equipment for manufacturing. They generally deliver their products to all the automobile manufacturers on the same terms and this is possible only if they are not directly connected with any particular automobile manufacturer. In some countries, such as the U.S.A., where the industry has attained an advanced stage of specialisation, certain components which would normally be manufactured in the automobile factory itself, such as transmission and axles, might be purchased from subcontractors. A list of the important and special components which are normally manufactured in automobile factories and by ancillary manufacturers is given in Appendix V. Not included strictly within the scope of the automobile industry but closely connected with it are those industries which produce raw materials such as steel, semi-finished products such as rolled non-ferrous metals, forgings, castings, etc., and finished products such as ball bearings, textiles, glass and paints, and deliver them to the automobile manufacturers. Apart from these there are also the manufacturers of non-genuine components and parts ('copy manufacturers' as they are usually called) who manufacture only fast moving spare parts of popular models of vehicles. They have no direct dealings with the automobile factories but buy sample parts, copy them and sell them to dealers or also directly to consumers. If these manufacturers produce parts according to the technical specifications and of consistent quality, they can play a useful role by offering competition in the market and keeping down the prices.

(b) The automobile industry in India, as in other countries, comprises both automobile manufacturers and component manufacturers, though the progress made so far in automobile manufacture has not reached an advanced stage, and the manufacture of components of ancillary character is also in an early stage of development. We will examine in this and the succeeding paragraph the position of the main industry and in paragraphs 8 and 9 below the position of the ancillary industries.

The following 12 manufacturers/assemblers assemble cars and trucks from vehicles imported in c.k.d. condition:

- (1) Hindustan Motors Ltd., Calcutta;
- (2) Premier Automobiles Ltd., Bombay;
- (3) Automobile Products of India Ltd., Bombay;
- (4) Standard Motor Products of India Ltd., Madras;
- (5) Ashok Motors Ltd., Madras;
- (6) General Motors India Ltd., Bombay;
- (7) Ford Motor Company of India Ltd., Bombay;
- (8) Addison & Company Ltd., Madras.
- (9) Mahindra & Mahindra Ltd., Bombay;
- (10) Dewar's Garage & Engineering Works, Calcutta;
- (11) Peninsular Motor Corporation Ltd., Calcutta; and
- (12) French Motor Car Company Ltd., Bombay.

Of these, only the first five firms have a manufacturing programme; and of these five again, only two firms, namely, Hindustan Motors Ltd., Calcutta, and Premier Automobiles Ltd., Bombay, have so far taken effective steps for the manufacture of certain components. Mahindra & Mahindra Ltd., Bombay, and Dewar's Garage & Engineering Works, Calcutta, are assemblers of vehicles of special type, namely, 'Jeep' and 'Land-rover'. The total amount of capital invested in the industry in respect of seven units for which information is available is at present about Rs. 8.8 crores and the total number of persons employed in all the 12 units is 8,876 of which 2,563 are employed in office and 6,313 are workers.

All these twelve firms assemble or manufacture under agreements entered into with foreign automobile manufacturers. Hindustan Motors Ltd., Calcutta, have an agreement with Nuffield Group in U.K., for the assembling and manufacture of Hindustan 14 and with Studebaker Corporation in the U.S.A., for the assembly and manufacture of Studebaker passenger cars and commercial vehicles. Premier Automobiles Ltd., Bombay, operate under an agreement with Chrysler Corporation, U.S.A., for the assembly of Plymouth, Dodge, De Soto and Chrysler cars and Dodge, De soto and Fargo commercial vehicles as well as with Fiat S.R.A., of Italy for the assembly and ultimate manufacture of Fiat cars. Automobile Products of India Ltd., Bombay, are associated with Rootes Group in U.K. for the assembly of Hillman Minx, Humber and Sunbeam-Talbot cars and Commer, Karrier and Tilling-Stevens commercial vehicles. Standard Motor Products of India Ltd., Madras, have an agreement with Standard Motor Co. of U.K., for the assembly of Standard Vanguard cars. Ashok Motors Ltd., Madras, have an agreement with Austin Motor Co. Ltd., of U.K., for the assembly of Austin cars and commercial vehicles and with Leyland Motors Ltd., of U.K., for the assembly of

Leyland commercial vehicles. General Motors India Ltd., Bombay, are a subsidiary of General Motors Corporation, U.S.A.; for the assembly of all G.M.C. models of cars and commercial vehicles in the U.S.A., Canada, U.K., Germany and Australia. Ford Motor Co. of India Ltd., Bombay, operate under the licence of Ford Motor Co. of Canada Ltd., for the assembly of all Ford models of cars and commercial vehicles produced in the U.S.A., Canada, U.K., France and Germany. Addison & Co. Ltd., Madras, French Motor Car Co. Ltd., Bombay, and Peninsular Motor Corporation Ltd., Calcutta, are associated with the Nuffield Group in U.K.; for the assembly of Morris cars (except Morris Oxford and its successors), Riley, M.G. and Wolseley passenger cars and Morris commercial vehicles. Peninsular Motor Corporation Ltd., Calcutta, are also associated with International Harvester in the U.S.A., for producing International Harvester commercial vehicles, with Hudson Car Co. Ltd., U.S.A., for Hudson cars, and with the Renault of France for assembly of Renault cars. Mahindra & Mahindra Ltd., Bombay, have an agreement with Willys-Overland Motors (Inc.) of the U.S.A., for assembling all Jeep models and the Guy Motors Ltd., U.K., for the assembling of Guy commercial vehicles. Dewar's Garage & Engineering Works, Calcutta, are associated with Rover Co. Ltd., and the Singer Motors Ltd., of U.K., for the assembly of Rover and Singer cars and Albion Motors Ltd., U.K., for the assembly of Albion commercial vehicles.

(c) The total annual assembling capacity of all the 12 firms, on the basis of information furnished by them, is 84,014 cars and commercial vehicles as shown below:-

Name of firm	Types of vehicles in their manufacturing/ assembling programme		Annual capacity
	Cars	Trucks	
<u>FIRMS WITH A MANUFACTURING ' PROGRAMME.</u>			
1. Hindustan Motors Ltd.	Studebaker Hindustan 14	Studebaker	18,000
2. Premier Automobiles Ltd.	Dodge De Soto Plymouth Fiat	Dodge De Soto Fargo	12,000
3. Standard Motor Products of India Ltd.	Standard Vanguard		2,950

Name of the firm	Types of vehicles in their manufacturing/assembling programme		Annual capacity
	Cars	Trucks	
4. Automobile Products of India Ltd.	Hillman Minx	Commer	4,000
5. Ashok Motors Ltd.	Austin	Austin Leyland C/F	7,540 <u>44,490</u>

PURE ASSEMBLERS (WITHOUT ANY
MANUFACTURING PROGRAMME)

6. General Motors India Ltd.	Cadillac Buick Oldsmobile Chevrolet Pontiac Vauxhall	Chevrolet G.M.C. Bedford	16,000
7. Ford Motor Co. of India Ltd.	Ford Prefect Consul Zephyr	Ford Fordson Thames	11,400
8. Addison & Co. Ltd.	Morris— Minor	Morris— Commercial	624
9. Mahindra & Mahindra Ltd.	Jeep	Jeep Guy	3,000
10. Dewar's Garage & Engineering Works.	Rover Singer	Land-Rover Albion	1,500
11. Peninsular Motor Corporation.	Hudson Morris— Minor Renault	International— Harvester Morris— Commercial	6,000
12. French Motor Car Co. Ltd.	Morris— Minor	Morris — Commercial	1,000
			<u>84,014</u>

The total production of the twelve firms of both cars and commercial vehicles and their sales during the last two years are as shown below:-

				Cars and Commercial vehicles	
				Production	Sales
1951	..	...	..	21,577	22,393
1952	..	...	..	14,873	15,723

The average annual sales for the last four years were 19,788 vehicles consisting of 9,426 cars and 10,362 commercial vehicles. It is evident that only a small part of the total capacity of the industry is being utilised at present, or in other words the present capacity is far in excess of what is required to meet the existing domestic demand.

(d) The present position of each of the 12 manufacturing/assembling firms is briefly as follows:-

1. Hindustan Motors Ltd.

They have taken up only the production of the model 'Morris Oxford' and do not intend to start production of any other Morris type except the eventual successor of 'Morris Oxford'. As they have put this model on the market under their own trade name 'Hindustan 14', they are free to replace any of its parts by indigenous parts. Morris Motors Ltd., have reserved the right to appoint assemblers in India for other Morris models. The total authorised capital of Hindustan Motors Ltd., is Rs. 20 crores and the total paid up capital Rs. 4.96 crores, of which investment in plant and equipment now amounts to about Rs. 2 crores and in buildings about Rs. 60 lakhs. The total number of persons employed on 1st April, 1953, was 1,757.

The annual capacity on single shift basis has been assessed at 18,000 vehicles of Hindustan and Studebaker models. This capacity could be doubled or trebled on double or triple shift working. They are producing 1.5 litre Hindustan 14 passenger cars, Studebaker Champion, Commander and Land-Cruiser passenger cars with 6 cylinder engine as well as trucks with carrying capacities from 1 to 3 ton. Their actual production in 1951 was 2,530 vehicles (2,161 cars and 369 trucks) and in 1952, 2,354 vehicles (1,185 cars and 1,169 trucks and buses).

They are planning to produce 3 ton truck with 4 X 4 drive and 8 cylinder V engine and it is intended to manufacture this vehicle in conjunction with

the 3 ton truck with 4 X 2 drive. The V 8 engine will be used also for the high-powered Studebaker car. For Hindustan 14 passenger cars most of the important parts which are normally manufactured by automobile manufacturers such as cylinder block, cylinder head, flywheel and gear box are under production. For Studebaker cars and trucks, Hindustan Motors Ltd., are assembling on the usual lines, i.e., they are taking from indigenous sources only such items as tyres, batteries, rubber parts, upholstery materials, etc.

2. Premier Automobiles Ltd.

The authorised capital of the firm is Rs. 10 crores and the paid up capital about Rs. 2.2 crores of which about Rs. 1 crore have already been invested in plant and machinery and Rs. 90 lakhs in buildings. The total number of persons employed is 2,285. They are producing Plymouth, Dodge and De Soto passenger cars which do not correspond exactly to the models handled by the Chrysler Corporation in the U.S.A. under the same names. The difference relates not to the basic assemblies but mainly to the bodies. The Fiat car is a two-seater two-door car. Premier Automobiles Ltd., do not assemble the bigger Fiat passenger car A 14 at present. Among the trucks they assemble are (i) 1 ton 4 X 4 single tyred at the front and rear axle with 93 h.p. engine, (ii) 3 ton 4 X 2 double-tyred at the rear axle with 110 h.p. engine, and (iii) 3 ton 4 X 4 single-tyred at the front and rear axle with 115 h.p. engine. With mainly the same assemblies as the 3 ton truck, bus chassis are also built with 92" wheel base. The 3 ton truck and bus chassis can also be delivered with Perkins 6 cylinder diesel engine of 85 h.p. which is imported from U.K. They have no plans to produce any other vehicles at present. As regards the manufacturing plan, it is not proposed to start manufacture of major components for passenger cars except those for which production facilities would be available in connection with the development of truck production, i.e., propeller shaft, telescopic shock absorbers, etc. As the passenger car engine is similar to the truck engine, it is planned to utilise the same engine to meet the requirements for the passenger cars.

The capacity of the firm is 30 passenger cars and 15 trucks per day in an 8-hour shift or about 12,000 vehicles per annum. Actual production in 1951 was 2,517 vehicles (529 cars and 1,988 trucks) and in 1952, 2,034 vehicles (414 cars and 1,620 trucks). Some progress has been made in the utilisation of indigenous items in production and the pace is expected to increase when the manufacturing programme for trucks makes a headway.

3. Automobile Products of India Ltd.

The paid up capital of the firm is Rs. 35 lakhs. They have already invested about Rs. 9.6 lakhs in plant and machinery and Rs. 17.5 lakhs in buildings,

and employ 445 persons. They started their activities in 1949 after Government had approved their progressive production programme covering a period of five to seven years from the date the plant commenced production, which was to be not later than 31st August, 1951.

The capacity of the factory on single shift basis is 3,000 cars and 1,000 trucks. Their actual production in 1951 was 2,243 vehicles (1,974 cars and 269 trucks) and in 1952, 1,316 vehicles (878 cars and 438 trucks). They are assembling Hillman Minx passenger cars with 1.34 litre 4 cylinder engine and Commer chassis with three different carrying capacities from 1.25 tons to 5 tons and three different petrol engines. Chassis can be delivered with Perkins diesel engine if required and most of the chassis for trucks and buses are equipped with diesel engines. Karrier trucks and buses are assembled only occasionally when Municipalities place special orders. Since the firm of Tilling-Stevens have joined the Rootes Group only recently, these trucks are not being imported at present. They plan to import and assemble also Humber-Hawk passenger cars with 4 cylinder engine of 2.266 litre cubic capacity.

4. Standard Motor Products of India Ltd.

They are assembling only Standard Vanguard passenger cars. They are also importing Ferguson agricultural tractors in s.k.d. condition. This tractor has an Otto engine operated with kerosene oil and since most of the parts of this engine are the same as those in the Standard Vanguard car, it would be possible to include the tractor in their progressive manufacturing programme. The total authorised capital of the firm is Rs. 1 crore, out of which the paid up capital is about Rs. 22.2 lakhs. Their total investment in buildings is about Rs. 5.8 lakhs and about Rs. 2 lakhs in plant and machinery. The annual capacity of the factory is stated to be 2,500 passenger cars and 450 commercial vehicles. In 1951, they assembled 614 cars, and in 1952, 363 cars and 77 utility chassis. They employ 293 persons.

5. Ashok Motors Ltd.

The total authorised capital of the firm is Rs. 2 crores and the total paid up capital is Rs. 54 lakhs, of which Rs. 4.6 lakhs have already been invested in plant and machinery at Ennore near Madras and Rs. 11.6 lakhs in buildings. They employ 373 persons. They are producing two models of passenger cars, Somerset A 40 with 1.2 litre 42 B.H.P. engine and Hereford A 70 with 2.2 litre 68 B.H.P. engine, besides 3 ton and 5 ton Austin trucks which are delivered either with Austin petrol engines or Perkins diesel engines. They are also producing 5 ton Leyland trucks and buses with 100 B.H.P. diesel engines. The total capacity of the factory is stated to be 20 passenger cars and 6 commercial vehicles per day in single shift or about 7,540 vehicles per annum.

The production in 1951 was 1,601 vehicles (1,245 cars and 356 trucks) and in 1952, 983 vehicles (838 cars and 145 trucks). No significant progress has so far been made in their manufacturing programme. They have recently started buying machine tools and these would be installed in a new shop which is under construction. They are going to sponsor and develop the manufacture of certain ancillary parts such as sparking plugs and other electrical equipment as well as diesel fuel injection equipment through Motor Industries Co. Ltd., Madras.

6. General Motors India Ltd.

They are a subsidiary of General Motors Corporation in the U.S.A., and represent in India all products coming under the jurisdiction of General Motors Corporation regardless of the source of supply. They handle Cadillac, Buick, Oldsmobile, Pontiac, Chevrolet, and Vauxhall passenger cars and Chevrolet, G.M.C., and Bedford trucks and all parts and accessories applicable thereto. Two parts of the factory, i.e., Body Shop and Battery Department, are self-contained and manufacture products which are sold on the same terms to all buyers and which, therefore, must be considered as ancillary parts. The number of persons employed by them is 1,665.

The annual capacity of the factory on the basis of one shift of 8 hours a day is stated to be 15,000 cars and trucks. Only a small proportion of the capacity is being utilised at present - 20 per cent in the Assembly Department, 40 per cent in the Body Building Department, and 60 per cent in the Battery-making Department. Their actual production in 1951 was 6,036 vehicles (2,273 cars, 3,763 trucks and buses) besides 633 bus chassis and in 1952, 3,511 vehicles (1,048 cars, 2,463 trucks and buses) besides 325 bus chassis. They are using indigenous items such as tyres, batteries, rubber parts, paints, upholstery materials, etc., in the production of their vehicles.

7. Ford Motor Company of India Ltd.

Their production covers all Ford types which are manufactured by their associates in Canada and by the Ford Motor Company in U.K. They employ 773 persons. They are assembling Ford V 8 Custom, Ford Prefect, Consul and Zephyr cars and Ford V 8 trucks with carrying capacity from half a ton to 5 tons and Thames trucks produced in U.K. with petrol or diesel engines.

The annual capacity of the firm is 11,400 cars/trucks but the actual production during the last two years has been only a small proportion of the capacity being 1,966 vehicles in 1951 (1,291 cars and 675 trucks) besides 120 bus chassis and 1,732 vehicles in 1952 (1,221 cars and 511 trucks) besides 32 bus chassis. They have made it clear that they have no plan to undertake manufacture of components and parts in India. They have, however, made some pro-

gress in the purchase of indigenous parts and have plans to develop these purchases further.

8. Addison & Company Ltd.

They are producing Morris Minor passenger cars, Morris 10 and 20 cwt. delivery vans, and Morris 5 ton trucks. The total number of persons employed is 95. Their authorised and paid up capital is Rs. 20 lakhs out of which Rs. 1.3 lakhs have been invested in plant and machinery and Rs. 8.3 lakhs in buildings. Their annual capacity on single shift basis is 624 vehicles per year and actual production in 1951 was 1,223 vehicles (1,146 cars and 77 trucks) and in 1952, 569 vehicles (536 cars and 33 trucks). They assemble on the usual lines, i. e., they purchase items like tyres, batteries, upholstery materials, rubber parts and paints from indigenous sources.

9. Mahindra & Mahindra Ltd.

They are a private limited company and employ 374 persons. They are producing (i) Universal 4 wheel driven Jeep which corresponds mainly to the army type, with 2.2 litre, side valve, 4 cylinder engine; (ii) Jeep utility van (station wagon) 2 wheel driven with independently sprung front wheels and 2.2 litre Hurricane 4 cylinder F Head engine; and (iii) Jeep truck 4 wheel driven with an approximate carrying capacity of 0.75 tons.

The capacity of the factory is stated to be 3,000 Jeeps per year on one shift working of 8-hours a day. Their actual production in 1951 was 641 vehicles (493 Jeeps and 148 utility vans) besides 12 Guy diesel chassis and in 1952, 1,163 vehicles (969 Jeeps and 194 utility vans) besides 97 diesel chassis. They are assembling on the usual lines, i. e., items like tyres, tubes, batteries, rubber parts including fan belts, painting materials, brake fluid, upholstery materials, canvas and foam rubber products are purchased from indigenous sources. They have been importing complete frames so far but in the near future frames would be imported in a dismantled condition and rivetted and welded together in the factory. The sheet parts for bodies are at present being imported, welded together, painted and outfitted. The seats including the seating structure are being made but tubes for the seats are imported.

10. Dewar's Garage & Engineering Works.

They are a private concern and employ 462 persons. Nearly half the strength of labour staff is engaged on repair work. Their capacity is stated to be 1,500 motor vehicles. The actual production in 1951 was 862 vehicles (230 cars and 632 trucks), and in 1952, 150 vehicles (84 cars and 66 trucks). They assemble on the usual lines and purchase items like tyres, batteries and upholstery materials from local sources.

ii. Peninsular Motor Corporation Ltd.

They are producing Morris Minor, two models of Hudson, Renault 760 c.c. rear engined cars and International Harvester trucks and Morris Commercial vehicles. The authorised capital of the firm is Rs. 50 lakhs out of which the paid up capital is Rs. 36 lakhs. Their investment in plant and machinery is about Rs. 1 lakh and they employ 193 persons. Their annual capacity is stated to be 6,000 vehicles (2,500 cars and 3,500 trucks). The actual production in 1951 was 887 vehicles (571 cars and 316 trucks), and in 1952, 479 vehicles (225 cars and 254 trucks). They assemble on the usual lines, obtaining tyres, batteries, rubber parts, upholstery and paints from indigenous sources.

12. French Motor Car Company Ltd.

They are producing Morris Minor passenger cars of 0.9 litre, Morris Commercial vehicles with payloads from 10 cwt. to 5 ton and heavier trucks which are delivered with diesel engines on request. The capacity of the firm is 1,000 vehicles per year consisting of cars and commercial vehicles in equal numbers while the actual production in 1951 was 457 vehicles (301 cars and 156 trucks) and in 1952, 219 vehicles (142 cars and 77 trucks). They employ 161 persons. The usual parts, viz. tyres, batteries, rubber parts, upholstery and paints, are obtained from indigenous sources.

7. (1) (1) The manufacturing programme of Hindustan Motors Ltd., includes the following:-

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|---|---|
| Programmes of manufacture:
Hindustan Motors Ltd. | (a) Hindustan 14 passenger car - 4 cylinder 1.475 litre 40.5 B.H.P. engine. |
| | (b) 3 ton truck - 3.8 litre V 8, 120 B.H.P. engine, two wheel and four wheel drive (4 x 2 and 4 x 4). |
| | (c) Studebaker passenger car for which 3.8 litre engine of 3 ton truck will be used. |

The capacity of the factory is governed in the machining department by the cylinder block and crank-shaft lines and in the assembling department by the paint shop. After allowing for these bottle-necks and making other necessary allowances, our Automobile Expert has assessed the capacity at 18,000 vehicles per shift per year. At present only a fraction of the total capacity of the plant is being used.

(11) The components of Hindustan 14 car which are being manufactured at the factory of Hindustan Motors Ltd., are mentioned in Appendix VI (A) and the components of Studebaker truck which are being manufactured are mentioned in

Appendix VI (B). Some of these components are almost wholly manufactured in the factory and are marked 'a'. Components which are produced from imported forgings and castings and machined in the factory are marked 'c'. Certain components and parts which Hindustan Motors Ltd., will delete from their next order for 1,000 sets for motor cars are given in Appendix VI (C). Hindustan Motors Ltd., have drawn up a manufacturing programme up to the end of 1954 and details of the parts for Hindustan 14 car and Studebaker truck which are going to be manufactured in addition to those already under production are given in Appendices VI (D) and VI (E), respectively. Parts 36 to 62 in Appendix VI (D) of Hindustan 14 car are being produced at present from imported raw materials, stampings and castings, but will hereafter be produced from indigenous sources, by making use of Hindustan Motors' own foundry and forge. After the manufacturing programme as well as the programme for the development of indigenous parts has been implemented, the major items to be imported for Hindustan 14 cars will be only body sheet metal parts and glass, and some complicated items like carburettors, air cleaners, window regulators, instruments, clutches, brake and clutch linings, etc. Production of Studebaker engine and of other items in the progressive manufacturing programme will be based completely on indigenous raw materials, forgings and castings. The dies for the crankshafts and connecting rods have been ordered. The forgings will be made in Hindustan Motors' own forge. The patterns for the castings are also on order and the foundry will be able to handle this job.

(iii) As regards the machinery and the machine tools required for the fulfilment of the programme, we are advised that in every case of automobile manufacture certain adjustments between specialised machinery and general purpose machinery are necessary. The general purpose machinery is specialised on jobs but not on components and therefore, it does not become obsolete when a model undergoes alteration or when a new model comes into production. At the factory of Hindustan Motors Ltd., specialised machinery has been installed only for cylinder blocks, crankshafts and connecting rods. Most of the other parts are manufactured on machine tools which are not specialised for particular parts and which, therefore, can be used for producing various other parts. As a whole this general purpose machinery has a higher capacity than the cylinder block, crankshaft and connecting rod lines. The desirability of installing general purpose machinery is realised by the management and all recent acquisitions have been of the general purpose type. At present 36 out of a total of 516 machine tools are single purpose machines suitable only for manufacturing Hindustan 14 car. These machine tools could be partly adapted for other purposes but since the expenses would be high it may be more economical to buy entirely new machine tools.

For the implementation of the future manufacturing programme of Hindustan 14 car no new machine tools are required. Necessary tools, fixtures and jigs will, however, have to be installed at a fairly heavy initial expenditure. As regards 3 ton truck the position is that the cylinder block cannot be manufactured with the existing machine tools of the cylinder block line used for Hindustan 14 car and completely new machine tools are required. For making crankshafts additional machinery is necessary. In all, about Rs. 9 lakhs worth of machinery would have to be purchased to make V 8 engine. All these machine tools would be of the general purpose type and could be adjusted for other engines. So far only some of the tools, jigs, and fixtures required for the manufacture of 3 ton truck have been ordered; the remaining will be made in the tool room of the factory after the acquisition of new machine tools. For the other assemblies of 3 ton trucks i.e., clutch housing, gear box, rear axle, front axle and steering, no detailed investigation about the machine tools has been made. It is, however, believed that these assemblies can be manufactured to a large extent with the available capacity, particularly the gear cutting capacity. It is estimated that for every 80 Studebaker trucks the capacity for manufacturing Hindustan 14 cars will be curtailed by 100 units.

As no part of the machinery installed at the factory is older than 5 years and part of it is even more recent and as all the machine tools have been bought new, the equipment at the factory can be said to be up to date. No part of this machinery would become surplus (except some bar automatic machine tools) if the machine shop is run at full capacity. There will, of course, be surplus machining capacity on each machine tool so long as the total capacity of the plant is not fully utilised but none of the machine tools can be treated as surplus.

At present the tool room is equipped with 45 machine tools which were chosen with a view to maintaining the tools necessary for the production of Hindustan 14. Fortythree more machine tools are required to step up the capacity of the tool room. This additional capacity will be used to manufacture part of the tools, jigs and fixtures needed for the manufacturing programme of Studebaker vehicles. The aim of Hindustan Motors Ltd., is to become independent of foreign firms for the maintenance and manufacture of all jigs, tools and fixtures. They have already developed the designing of tools and fixtures and will be self-sufficient in this respect in future.

Although the general layout of the plant is adequate there are two features which need to be noted. Firstly, the capacity is much in excess of the potential demand in the existing conditions. And secondly, machine tools which are suitable only for the present model of Hindustan 14 car have been installed and this machinery will have to be written off when the new model is produced.

It may also be stated that while the process of manufacture in the factory has been planned on the usual lines, production difficulties are increased by the fact that only a small proportion of the capacity of the machine shop is being utilised. A worker who would normally serve one or two machine tools is put to a variety of jobs and this leads to an increase in scrap percentage and in some cases also affects the quality.

(iv) As regards the availability of technical know-how and technical skill required for implementation of the manufacturing programme, the conditions are generally favourable. Hindustan Motors Ltd., have arrangements with foreign associate companies for obtaining all information relative to the models produced and can secure all technical information promptly. No difficulties are expected to arise in respect of skilled personnel because all major posts are occupied at present by experienced persons. Only for a few minor posts such as jig and tool designer and draftsman, forge die designer and draftsman, suitable persons will have to be secured. The machine shop is in charge of a foreign technician who has under him foreigners controlling each section. These in turn have assistants who have been selected from the best machine tool setters and each section is manned with setters who are not only familiar with the particular section from a specialisation point of view, but are also capable of setting any machine. More setters and workers will be required if the programme is expanded but there would be no difficulty in securing them. We are advised that the efficiency of labour when equipped with the same machinery approaches within a fair margin of the level attained in U.K.

Hindustan Motors Ltd., have made arrangements for the training of apprentices but no special apprentice department exists at present. It is, however, intended to establish one in the near future. More than 30 Indians were sent by the firm for foreign training in the specialised branches of automobile industry. Seventeen graduates have already been trained in either Studebaker or Nuffield factories and two more are at present in U.K. undergoing training.

(v) Hindustan Motors Ltd., depend on their foreign associates for designs for Hindustan 14 and Studebaker passenger cars and also for Studebaker truck and bus chassis. There is a risk of obsolescence and Hindustan Designing arrangements. Motors Ltd., have to adopt new models evolved by the foreign associates. The risk in the case of V 8 engine is considered to be less because this engine has been developed recently and may remain unaltered for 5 years or more. We were assured by the representatives of Hindustan Motors Ltd., that they realise the importance of becoming independent of foreign associates for designs and are taking steps to have their own designers.

(vi) The parent factories viz., Morris Motors Ltd., in the case of Hindustan 14 car and Studebaker Corporation, U.S.A., in the case of Studebaker vehicles, have laid down standard specifications for each component. If any imported component is replaced by an indigenous part, either purchased or self-manufactured, it is sent to the associate factory for approval. In the case of Hindustan 14 car, components can be replaced by indigenous substitutes without reference to the associate company but to ensure a high standard of quality, Hindustan Motors Ltd., have so far adhered to the practice of forwarding the substitutes to the associate company for approval.

To safeguard consistency of quality, tests are carried out at the factory by an inspection department in charge of a foreign expert. Every engine, together with the gear box is checked for performance and proper functioning. Each rear axle is also tested for general functioning and noise. Each component is checked to ensure accuracy of machining and all metal treatment processes are referred to the laboratory for physical and chemical check before being passed on to subsequent stages. All components are checked one against the other by special quality inspection section. Each vehicle is road-tested and examined and re-examined for any minor adjustments that may be needed. Finally, each vehicle is passed on to the vehicle analyser for checking power brakes, water cooling system and electrical system. In respect of raw materials, only spot checks are made on imported raw materials but in the case of indigenous material one hundred per cent check is made in the laboratory.

(vii) Several raw materials required during the period of the manufacturing programme will have to be imported, though Hindustan Motors Ltd., are making endeavours to develop indigenous sources of raw materials.

(viii) As regards finance required for the implementation of the programme, Hindustan Motors Ltd., do not anticipate any difficulty.

(ix) Our examination of the technical and other aspects of the manufacturing programme of Hindustan Motors Ltd., shows that the programme is comprehensive and substantial progress has been made towards the manufacture of major components. The capacity of the plant is, however, far in excess of the output for which market can be found within the country during the next two years or so. In formulating our recommendations regarding the import quota, we have taken into account this feature along with other factors mentioned above.

(2) (1) The manufacturing programme of Premier Automobiles Ltd., includes only 3 ton truck with 115 B.H.P. petrol engine for civilian as well as army use.

For the time being they are not planning to start production of major parts for passenger cars except those for which production facilities will be available in connection with the development of truck production, i.e., propeller shaft, telescopic shock absorbers, etc. As Plymouth base car engine is similar to the Dodge group truck engine, the engine manufactured for the truck may also be used to meet the requirements of the passenger car.

The rated manufacturing capacity of the plant is claimed to be 30 trucks and 10 cars per 8 working hours, i.e., 12,000 units on single shift basis. A target of production at 10 engines on single shift basis has been adopted but if the volume of production has to be increased it will be possible to do it by working on two or three shift basis. At present a major portion of the rated capacity remains unutilised due to low volume of demand. They are utilising at present about 20 per cent of the capacity of the plant for the production of vehicles; and are trying to utilise the remaining capacity for producing components for other industries such as springs and shackles for Indian Railways, filler necks for Ordnance factories, roller pins and crankshafts for diesel oil engines and load bodies for the Defence Ministry.

(ii) The components and parts of Dodge truck and Plymouth base car which Premier Automobiles Ltd., are manufacturing at present are given in Appendix VII(A). They have drawn up a manufacturing programme up to the end of 1954 the details of which are given in Appendix VII(B). The manufacture of important components such as (a) engine, (b) transmission, (c) chassis frame, (d) differential, (e) front and rear axle, (f) wire harness, and (g) front and rear shock absorbers for cars and trucks would be taken up as a part of the programme. Engine assembly would be divided into four groups and the whole of it will be completed by the beginning of 1954. Transmission assembly is expected to be completed by the end of 1953. Chassis frame and differential assembly are also expected to be completed before the end of 1954. Front and rear axle will be taken in hand in 1954 and will be completed during the same year. A sample of wire harness has already been produced.

(iii) As regards the machinery and the machine tools required for the implementation of the programme, the existing equipment of the factory has been selected under the expert advice of Premier Automobiles' foreign

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associates and is up to date. There is a well-equipped tool designing section as well as a tool room with most of the necessary machine tools to produce jigs, dies and other kinds of tools. The forge, which is under the supervision of an American

specialist, operates one ton, two ton and four ton hammers. There is room for installing additional hammers and to develop a far higher capacity than is used at present. In the press shop there are several presses to work on different sheet metal parts; the biggest press can handle a frame cross member and the half cab roof of a truck. Besides the equipment already available, additional equipment has been ordered. Machinery and equipment already on order includes machinery required for machining cylinder block, machinery for engine manufacture, foundry equipment for production of cylinder block, cylinder head, etc., and machinery for the manufacture of truck transmission parts. The machinery proposed to be ordered includes machines, tools, gauges and equipment required for the manufacture of differential parts, crankshaft, camshaft and transmission and also foundry equipment for cylinder block. For manufacturing crankshaft, however, an eight ton hammer will be required.

(iv) As regards the availability of technical 'know-how' and technical skill required for implementing the manufacturing programme, the terms of firm's agreement with the foreign associates are fairly comprehensive.

Technical 'know-how' and skilled personnel. Under the agreement with the Chrysler Corporation, U.S.A., Premier Automobiles Ltd., can obtain on loan manufacturing and working drawings, technical data and information covering the design and manufacture of the Corporation's motor vehicle parts and/or other products current during the term of agreement as well as general manufacturing advice and technical assistance. The Corporation will also prepare for Premier Automobiles Ltd., specifications for the machinery, jigs, fixtures, dies and gauges required by the latter and assist in the purchase of tools, equipment and machinery. Furthermore, the Corporation have agreed to send trained personnel to India to supervise the installation of the manufacturing equipment and to assist Premier Automobiles Ltd., with their manufacturing operations. In the beginning Premier Automobiles Ltd., sent about a dozen qualified engineers with some experience for training in the U.S.A., in the different branches of automobile engineering and these engineers are at present working in the factory. They have a scheme of training apprentices in the different departments and after a few years' training they will be employed as regular technical workers.

(v) As regards designs, Premier Automobiles Ltd., depend on their foreign associates for drawings and other assistance. They have a large designing department of their own with engineers trained in foreign countries for production of tools and equipment designing. Blueprints are received from the Chrysler Corporation and studied and then the process of manufacturing the parts is laid down on the operation sheets.

Designing arrangements.

After this the men on the board are given a general idea of the individual tools and equipment required to manufacture the parts according to the operation sheets.

(vi) Premier Automobiles Ltd., under the agreement with Chrysler Corporation, U.S.A., have to maintain the highest standards of quality and workmanship in their assembly and manufacturing operations which are subject to inspection by the representatives of the Corporation. Parts manufactured in the factory are first sent to the Corporation for thorough test and it is only after their approval that regular production is started. No parts or materials other than those purchased from the Corporation can be incorporated in motor vehicles without the prior written approval of the Corporation and also the approval of samples of such parts or materials. The same conditions apply also to the parts purchased by Premier Automobiles Ltd., from other firms in India or elsewhere. If any change is introduced by the Corporation in their specifications, Premier Automobiles Ltd., are required to revise specifications of the components manufactured by them. They, however, propose to freeze the design after their manufacturing operations have progressed to the extent of making 60 to 70 per cent of the parts locally.

Arrangements for testing and inspection are available at the factory. A laboratory has been setup where various paints, ferrous and non-ferrous metals, etc., are regularly tested. There is also production inspection department supervised by an engineer trained abroad. It is the responsibility of this department to carry out stage and final inspection of every component produced at the factory. After the management have satisfied themselves that the quality of production is up to the required standard, they send the components for the approval of Chrysler Corporation.

(vii) Several raw materials required during the period of the manufacturing programme will have to be imported, though Premier Automobiles Ltd., are making endeavours to develop indigenous sources of raw materials.

(viii) Premier Automobiles Ltd., have no research department attached to their factory. In their laboratory they carry out tests for checking the chemical analysis of the ferrous and non-ferrous materials used in the manufacture of automobile parts. The purpose of the tests is quality control and to see how far the local material compares with the foreign material.

Premier Automobiles Ltd., do not anticipate any major difficulty in carrying out their manufacturing programme. They have, however, mentioned that steel tubes of small diameter are not locally available. Similarly bright hexagonal or octagonal steel bars for the production of bolts and nuts are not available in the Indian market.

(ix) As regards the finance required for implementation of the programme of manufacture, we have been informed that they will be able to incur the necessary expenditure. Machinery and equipment under order are estimated to cost about Rs. 17 lakhs and the cost of the machinery to be ordered in the near future will be about Rs. 16 lakhs.

(x) Our examination of the manufacturing programme of Premier Automobiles Ltd., has revealed that so far they have not made any significant progress in the manufacture of the major components viz., engine, transmission and rear-axle. They have, however, made substantial progress in the manufacture of typical ancillary parts such as propeller shafts, radiators, leaf springs, mufflers, hand pumps and jacks. Their capacity even for these parts is not being fully utilised for their own vehicles.

(3) (i) The manufacturing programme of Automobile Products of India Ltd., lays stress on the production of Hillman Minx car with 1.34 litre and 4 cylinder engine. They propose to take up the manufacture of commercial vehicles at a later stage. The programme was approved by Government on 31st August, 1949 and covers a period of seven years. Its implementation commenced from May, 1950. The programme is now running in the third year and Automobile Products of India Ltd., claim that the progress actually made corresponds to the programme. They have a capacity of 3,000 cars and 1,000 trucks per annum, on one shift basis. The production is limited to 3,000 units per annum for domestic consumption in accordance with the conditions laid down by Government at the time of granting permission to the firm to start operations.

(ii) The details of the manufacturing programme of Automobile Products of India Ltd., are given in Appendix VIII. No progress has been made so far in regard to the manufacture of components but there has been some progress in the direction of making purchases of certain items of raw materials and parts from ancillary manufacturers in the country.

(iii) They have not gone much beyond the stage of assembly so far, although they have taken steps to implement their manufacturing programme. They have installed about 20 new machine tools in one of the shops and propose to instal further machinery. It is also proposed to utilise to the maximum the indigenous sources for the supply of such components and parts as can be manufactured by ancillary units in the country. They do not consider it necessary for an automobile unit in India with a manufacturing programme for about 3,000 units to adopt mass production methods and to go in for costly tooling. They have stated that machine tools, jigs, etc., which are required for manufacturing components and parts according to the programme by 31st May, 1953, are

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awaiting shipment in U.K., because the necessary import licences have not been issued by Government pending consideration of the Report of the Tariff Commission by them.

(iv) Automobile Products of India Ltd., have firm arrangements with their associates, the Rootes Group in U.K., ensuring continuity of technical 'know-how' and progressive advice on automobile engineering developments throughout the world. In addition, they are assured of the full backing of the engineering, technical manufacturing know-how on production of armoured cars and other specialised army vehicles which are developed and produced by Rootes Group in U.K. In the early stages, their main difficulty was to select persons and give training to them as machine tool setters and operators and they, therefore, decided that the best course would be to start machining operations on a small scale, train the required personnel and expand their machining capacity progressively until sufficient experience was gained to take up other operations. So far 29 Indians have been sent by them to U.K. factories for a three year training course in the various fields associated with the manufacture of motor vehicles. Most of them are being trained as Production Engineers. Three of them have already returned to India and are working in the factory.

(v) No independent designing arrangements have been made by them so far. For technical knowledge and information regarding designs, they are depending on their collaboration with the Rootes Group in U.K.

(vi) The standards of quality prescribed for components by them are in accordance with the engineering specifications and standards laid down by the Rootes Technical Service Ltd., and inspection is carried out by their Inspection Engineers in accordance with their specifications and standards. There are no restrictions on the use of original equipment manufactured by other firms in India so long as components are of suitable quality and available economically and in sufficient quantities. At present vehicles are imported into India in c.k.d. condition and progressive deletions are being effected where acceptable components and parts are available from ancillary industries in the country or are manufactured by themselves.

(vii) Difficulties are anticipated in procuring alloy steel and forgings of alloy steel with standard specifications and precision drawn bright bars of different shapes such as round, hexagonal, octagonal, etc. The firm have also emphasised the importance of taking practical steps to encourage the increased production of ferrous and non-ferrous metals within the country. No research and development department has been set up so far.

(viii) They expect to be in a position to meet the financial outlay involved in implementing fully the manufacturing programme. They propose to purchase components and parts from ancillary industries as far as possible and thus keep down their investment in machinery and equipment for the purpose of manufacture as much as possible.

(4) (i) The manufacturing programme of Standard Motor Products of India Ltd., is based on Standard Vanguard car, six seater with a rated 68 B.H.P. but its scope includes also manufacture of tractor and jeep. The engine unit is common to Standard Vanguard car, the tractor and the jeep, and this feature would be important in connection with the implementation of the manufacturing programme.

(ii) The scheme of Standard Motor Company Ltd., Coventry, for starting a plant in India was approved by Government on 11th December, 1948, on the conditions that the machining of the Standard Vanguard engine block and engine frame in the Indian factory was undertaken by them by the 1st January, 1952 and that arrangements were made to manufacture in the Indian factory before 1954 the components that are manufactured in their Coventry works for the Standard Vanguard so that by 1954 not less than 60 per cent of the components (other than those which are bought by their works from others) would be manufactured in the Indian factory. They applied to Government on 28th March, 1951 for a modification of the manufacturing programme because of the time lag in the commencement of operations. Their revised manufacturing programme was approved by Government on 18th August, 1952. The details of the revised programme are given in Appendix IX. They have undertaken to commence the machining of cylinder block by the middle of 1954. Little progress has so far been made by them in the manufacturing line. They have been making for their own requirements complete seats for utility chassis, seat runners, experimental petrol tank, etc., and have also made castings of cylinder heads and manifolds. They have stated that arrangements are complete for the manufacture of exhaust pipes, mufflers and tail pipes with necessary brackets.

(iii) They received licence to import the necessary equipment, machinery and tools in June, 1952 and the final batch of machinery, to complete Phase I of the programme was received in October, 1952. They are confident of implementing the programme subject to the necessary facilities being available. They do not propose to manufacture themselves all the items enumerated in the manufacturing programme but intend to buy many of these parts from firms with whom they have made special arrangements as also from their associates.

(iv) Standard Motor Company Ltd., Coventry, supply all technical information and also provide the machinery required by Standard Motor Products of India Ltd. and skilled personnel.

(v) No independent designing arrangements have been made so far. Their collaboration with Standard Motor Company Ltd., Coventry, will help them to obtain necessary technical knowledge and information regarding designs from the latter.

(vi) They are permitted to manufacture parts provided these are up to the specifications of Standard Motor Company Ltd., Coventry, and their written approval is obtained to use such parts. Inspection is carried out by the technical department of Standard Motor Company Ltd., Coventry.

(vii) They anticipate difficulties in importing raw materials especially alloy steel and would require facilities such as free licensing and duty free import of raw materials. No separate research and development department has been set up so far.

(viii) According to their original investigation the layout of the machine tools for the manufacturing programme was estimated to cost a little over one crore of rupees. The first stage was estimated to cost Rs. 40 lakhs including packing, forwarding, etc. The stage has been completed at an overall cost of Rs. 7.5 lakhs by selecting general purpose machinery, largely through the good offices of Standard Motor Company Ltd., Coventry, who have spared their equipment at nominal book value. Additional capital required for the subsequent two stages would be obtained from their foreign associates. They do not anticipate any difficulty in meeting the financial commitments involved in the implementation of the manufacturing programme.

(ix) The manufacturing programme has barely made a start and it would be some time before Standard Motor Products of India Ltd., are able to show any appreciable progress.

8. (i) (a) In all countries where the automobile industry has reached an advanced stage of development, an automobile manufacturer is, from the technical standpoint, only partially a 'manufacturer', since he concentrates on the production of only the major components. Generally speaking, an automobile manufacturer manufactures components worth about 40 per cent of the ex-works price of an automobile and buys the remaining components, parts and accessories from ancillary industries. Ball and roller bearings, starting motors, generators, carburettors, air cleaners, oil filters, lamps, bulbs, tyres, fan belts, batteries, wheels, bolts, nuts, bushings, washers, springs, coils, bumpers, gaskets and rubber components are some of the typical products which are delivered by the ancillary

industries. These products are sold both as original equipment and as spare or replacement parts. Components and parts used as original equipment are purchased only by the automobile factories but spare parts can reach the consumer either through initial purchases made by the automobile factories or through spare part dealers or through the sales organisations set up by the ancillary manufacturers.

(b) In countries like the U.S.A. and Australia, the development of ancillary industries had reached an advanced stage before the manufacture of complete vehicles was taken up. In India, the position is, however, different. There exists at present only a nucleus of ancillary industry. The main ancillary parts that are being produced are pistons, piston rings, cylinder liners, leaf springs, batteries, tyres and tubes, other rubber components, cork and oil paper gaskets, thin wall bearings, wire harness, jacks, hairlok and coirlok seat, covers and spring cases for buses, hand pumps, automobile bulbs and lamps and bus bodies, cabs and van and truck bodies. In addition, Premier Automobiles Ltd., are producing radiators of the honeycomb type, propeller shafts and mufflers but unfortunately the well equipped ancillary capacity of this firm is part of an automobile factory so that practical difficulties exist in making it available to competing firms. Passenger car bodies which are an ancillary item produced by body-building firms in some automobile manufacturing countries are not being made in India at present.

(ii) The following ancillary industries have already been established in India.

I. ENGINE COMPONENTS

1. Pistons and piston rings:

Pistons and piston rings are being manufactured by India Pistons Ltd., at Madras. They are working under the licence of Associated Engineering Holdings Ltd., London. Shri Ram Industrials, Coimbatore, also claim to be manufacturing pistons for Ford, Chevrolet and other trucks. India Pistons Ltd., started their production of cast iron pistons in December, 1952. Their annual capacity for aluminium and cast iron pistons on single shift basis is 300,000 (aluminium 216,000 and cast iron 84,000). The capacity of Shri Ram Industrials is 2,400 sets per annum. The total production of aluminium and cast iron pistons by the India Pistons Ltd., was 4,236 sets up to the end of March 1953. The whole of the output was sold in the replacement market.

The capacity of India Pistons Ltd., for piston rings is 100,000 per month or 1,200,000 per annum on single shift basis. Production of piston rings commenced in 1950 from imported castings. Actual production was 1,223,933 in 1951

and 1,412,462 in 1952. The piston rings are being made by centrifugal casting of tubes, and the single ring casting system is to be introduced in the near future. The materials used in the manufacture of piston rings and pistons are mostly indigenous. Pistons and piston rings are manufactured according to the specifications of British Standard Institution and are subjected to close inspection before delivery.

2. Cylinder liners (dry):

Production of cylinder liners (dry) commenced at the factory of India Pistons Ltd., in October, 1952. The annual capacity of the factory per single shift for wet and dry liners is 120,000. Actual production of dry liners in 1952 and from January to March, 1953 was 4,394 and 4,600, respectively. The whole of the output in 1952 was sold in the replacement market.

3. Thin wall bearings:

The manufacture of these bearings has been undertaken by Kirloskar Oil Engines Ltd., in their factory at Kirkee, Poona. Production has now started on a commercial scale and 300 connecting rod bearings useful for Perkins engines have been produced, out of which 180 were sold. The thin wall bearings produced by the firm have been approved by the Bombay State Road Transport Corporation. The present installed capacity of the factory is 300 bearings per day but it can be raised to any extent as the demand develops.

4. Rubber mountings:

These are being made by National Rubber Manufacturers Ltd., Calcutta. Their total annual capacity is 3,300 mountings and actual production was 3,336 mountings in 1951 and 732 mountings in 1952. Nanco Rubber and Plastics Ltd., Coimbatore, have also an annual capacity for 6,000 mountings but they have not produced anything for lack of orders. National Rubber Manufacturers Ltd., have also begun production of metal rubber bondings for engine mountings.

5. Fan belts:

These are being made by National Rubber Manufacturers Ltd., Calcutta, Kadar Rubber Manufacturing Co. Ltd., Calcutta, and Travancore Rubber Works, Trivandrum. Their total capacity per annum is 482,000 belts and their total production in 1951 was 294,236 belts. National Rubber Manufacturers Ltd., have recently entered into an agreement with Goodyear Tyre and Rubber Co. of India Ltd., to manufacture fan belts in accordance with the latest American standard specifications. They produced 137,788 belts in 1951 and 285,000 belts in 1952. The production of Kadar Rubber Manufacturing Co. Ltd., in 1951 was 160,560 belts and in 1952, 257,156 belts. The major part of the production of both these firms

was supplied to the replacement market. Travancore Rubber Works produced 1,088 fan and industrial belts in 1951 and 1,523 fan and industrial belts in 1952.

6. Radiators (honeycomb):

Radiators of the honeycomb type are being made by the Premier Automobiles Ltd. Their annual capacity is claimed to be 12,000 radiators while actual production was 1,700 in 1951 and 1,000 in 1952. A large part of the production was utilised by them in their own factory. Only 216 radiators in 1951 and 307 in 1952 were sold as ancillary parts. The necessary pressings for water cases are made in the press shop of the factory and radiators can be made in different sizes.

7. Radiator hoses:

Radiator hoses (straight and bent types) are being manufactured by National Rubber Manufacturers Ltd., Calcutta, Kadar Rubber Manufacturing Co. Ltd., Calcutta, and Travancore Rubber Works, Trivandrum. The National Rubber Manufacturers Ltd., have an annual capacity on single shift basis of 67,000 for straight hoses and 33,000 for curved hoses, while Kadar Rubber Manufacturing Co. Ltd., have a capacity for 82,500 hoses of the straight and bent type per annum, and Travancore Rubber Works have a capacity for 30,000 ft. of straight hoses and 25,000 of bent hoses per annum. Actual production in 1952 was as follows: National Rubber Manufacturers Ltd., 53,070 hoses, Kadar Rubber Manufacturing Co. Ltd., 35,473 hoses and Travancore Rubber Works, 1,557 hoses.

8. Mufflers:

Muffler assemblies for trucks and cars are also being manufactured by Premier Automobiles Ltd. Their annual capacity for muffler assemblies is 60,000 for trucks and the same number for cars. Actual production of muffler assemblies for trucks was 1,750 in 1951 and 1,800 in 1952 and that of muffler assemblies for cars was 50 in 1951 and 442 in 1952. The whole production of mufflers for cars and 333 mufflers for trucks in 1951 and 300 in 1952 were sold as ancillary items.

II. TRANSMISSION AND SUSPENSION COMPONENTS

9. Propeller shafts:

These are being manufactured by Premier Automobiles Ltd. Their annual capacity is 1,500 for both rear propeller shaft assembly and front propeller shaft assembly. Actual production was 500 sets in 1951 and 1,050 sets in 1952. The whole of the production in 1952 was utilised in the factory.

III. FRAME AND BODY COMPONENTS

10. Leaf springs:

Metropolitan Springs Ltd., Bombay, and Canara Workshops Ltd., Mangalore, are producing leaf springs (front and rear) other than coil springs. Premier Automobiles Ltd., are producing leaf springs but mainly for supplying to the Indian railways. Other units engaged in the manufacture of leaf springs are Simpson & Co. Ltd., Madras, C.M. Smith & Sons, Nadiad (Bombay State), and Gemco Industries, Bombay.

Metropolitan Springs Ltd., commenced production in January, 1952 and Canara Workshops Ltd., in January, 1951. Their annual capacity is 600 tons each. Actual production of the Metropolitan Springs Ltd., during the eleven months from February - December, 1952, was about 280 tons which was sold mostly in the replacement market, no sales having been made to any automobile manufacturers or assemblers. Actual production of Canara Workshops Ltd., in 1951 was 131.30 tons and in 1952, 256.5 tons. Canara Workshops Ltd., have not been able to sell their products to any manufacturers assemblers of automobiles.

11. Malleable iron castings (chassis components):

These components are being manufactured by Malleable Iron & Steel Castings Co. Ltd., Bombay, who have a potential capacity of 150 tons per month of malleable iron parts. They manufacture black heart malleable iron and high duty castings and jacks. All kinds of chassis components can be made in the factory and delivered in a completely machined condition.

They claim to be the only firm in India manufacturing black heart iron and high duty castings conforming to American specifications MS 443 having 45,000 lbs. minimum tensile strength per sq. inch and elongation minimum 7.5 per cent and grade 35012 having 50,000 lbs. tensile strength per sq. inch and 12 per cent elongation. They use Indian raw materials and have installed a special rotary melting furnace to overcome the difficulty in respect of the pig iron required for the manufacture of malleable iron castings.

12. Bus bodies, station wagon bodies, truck bodies, steel cabs, pickup bodies and panel van bodies:

These are made by General Motors India Ltd., Bombay. They claim that the annual capacity of their factory on single shift basis is 300 station or panel wagons, 1,000 pickup vans, 3,000 truck bodies and steel platforms and 1,200 bus bodies. Actual production in 1952 was 175 station wagons or panel wagons, 150 pickup vans, 125 truck bodies with steel platforms and 415 bus bodies.

The body building department of the factory is self-contained and is actually the biggest department employing about 1,000 workers. Truck cabs, truck platforms, van bodies and especially bus bodies are designed, tooled up, welded together, outfitted and painted. Not only are bodies produced for the firm's own vehicles but special bus bodies are also supplied against orders from outside. The whole equipment has been so developed that most of the parts used are standardised and can be put together in many varieties so that without difficulty nearly all kinds of bodies can be manufactured. Deep drawn sheet metal parts can be made only to the approximate size of a cab roof. On the other hand, practically all sheet metal parts for cabs and bus bodies are made. Production starts with a design of the body in a special designing room, then it is tooled up, necessary dies are cast in a small foundry and machined and fitted. Zinc dies are also made when necessary. A press handling pieces up to cab roof size and a number of sheet painting machines have been installed. Steel tubes are bought from the Premier Automobiles Ltd., Bombay. All the usual body work can be done including the chromium plating.

Bus bodies are also made in the workshops of the State Road Transport Undertakings of Bombay and Madras. The Madras State Road Transport Undertaking makes bus bodies in co-operation with Hindustan Aircraft Ltd., Bangalore. These bodies are mostly of the composite type, the structure being a combination of wood and steel sections. All-metal construction has proved to be satisfactory only on good roads; on bad roads composite construction has been found to be more suitable.

13. Seat bench assembly:

Seat bench assembly comprising of tube bending, seat slider, seat runners, etc., is manufactured by Sanghavi & Co., Bombay, who have a capacity for 10,000 seats. They have started production only since 1952 and have supplied to Automobiles Products of India Ltd. according to their requirements.

14. Cushion springs:

Cushion springs are used for making spring cases of seat cushions and back-rests of most automobiles on which is mounted an overlay from either rubberised hair or substitute material, or coir, flock or cotton stuffing or foam rubber. The firms engaged in the manufacture of cushion springs are Hoare Miller & Co. Ltd., Calcutta, Bharat Spring Works, Bombay, and Calcutta Spring Works, Bombay. We have received information only from Hoare Miller & Co. Ltd., who have a capacity to produce 10,000 springs per day. This number would be adequate to meet the demand of springs for 35 passenger automobiles, 20 trucks and 10 buses per day. Actual production from 1st June, 1952 to 21st March, 1953 was 4,055

bus seats and 2,545 backrests, all of which were sold to assemblers/manufacturers of automobiles.

15. *Upholstery material:*

Upholstery materials of leather, plastic, jute, canvas and leathercloth are made by several manufacturers in India of whom eight have furnished information to us. Hoare Miller & Co. Ltd., Calcutta, Dharampur Leather Cloth Co., Bombay, Suedes and Leatherettes Ltd., Bangalore, and Bhor Industries Ltd., Bhor, manufacture artificial leathercloth, Chrome Leather Co. Ltd., and Gordon, Woodroffe Leather Manufacturing Co. Ltd., both in Madras, and Cooper Allen Branch of the British India Corporation Ltd., Kanpur, manufacture leather materials for upholstery. Howrah Mills Co. Ltd., Calcutta, manufacture cotton canvas waterproof.

Hoare Miller & Co. Ltd., are making overlays for spring cases of automobile seats and backrests viz. 'hairlok' moulded upholstery and rubberised coil. Their present production of these overlays would meet the requirements of 30 automobiles per day and they can increase their capacity, if necessary. They have an arrangement with Moulded Hair Co. Ltd., London, for the manufacture of 'hairlok' moulded upholstery and receive technical assistance from them.

Dharampur Leather Cloth Co., manufacture PVC artificial leathercloth for use as upholstery for cars and buses. Their capacity is 2,500 yards of plastic leathercloth per day on single shift basis and their actual production in 1951 was 149,421 yards and in 1952, 69,801 yards. Their materials have been approved by Chrysler Corporation, U.S.A., and Premier Automobiles Ltd., have been purchasing and using the leathercloth for roof-lining and door panels in their Dodge, De Soto and Plymouth cars. They have also supplied some quantities to State Road Transport Undertakings in Bombay and Travancore.

Bhor Industries Ltd., have been manufacturing since 1945 coated fabrics, plastic cloth and NC type of leathercloth which are used by the automobile industry for upholstery, panelling and top lining purposes.

Suedes and Leatherettes Ltd., have an installed capacity of 100,000 sq. yards per month on single shift basis.

Chrome Leather Co. Ltd., manufacture upholstery leather in different colours and prints required by cars, trucks and buses, station wagons, etc. Their annual capacity is about 2,500 hides per month but this can be increased, if necessary. Actual production was about 1,000 hides in 1951 and 59 hides in 1952. They have supplied small quantities of upholstery leather to the various automobile assemblers in India.

Gordon, Woodroffe Leather Manufacturing Co. Ltd., began production of upholstery leather in 1936 but did not supply it to the automobile industry until December, 1947. Their capacity for the production of upholstery leather in 1952 was 1,100,000 sq. ft. Actual production was 370,000 sq. ft. in 1951 and 182,000 sq. ft. in 1952. They supplied substantial quantities of the material to the various automobile assemblers in 1951 and 1952.

Cooper Allen Branch of British India Corporation Ltd., have a capacity to manufacture 2,000 sets of motor car upholstery from indigenous raw hides.

The Howrah Mills Co. Ltd., manufacture cotton canvas waterproof 36" wide and cotton canvas waterproof 30" wide. Their annual capacity for both types of water-proof canvas is 1,200,000 yards. Actual production of 36" wide W.P., in 1951 and 1952 was 47,906 yards and 299,239 yards, respectively, and of canvas 30" wide W.P., 26,950 yards and 139,489 yards, respectively. They have supplied their products to automobile manufacturers assemblers and also in the replacement market. They can also manufacture jute needle felt of 1/8", 1/4" and 1/2" thickness.

Certain other materials such as carpets made to size or shape, cotton wadding etc., are also being produced by a number of firms in India.

IV. ELECTRICAL EQUIPMENT

16. *Electric lamps and bulbs:*

These are being manufactured by Pradip Lamp Works, Calcutta, and Sanghavi & Co., Bombay. Pradip Lamp Works manufacture all types of miniature bulbs used in automobiles in their factory at Patna, and propose to manufacture headlamps in the future. The firm started production in 1951 and produced 21,622 bulbs in 1951 and 31,522 bulbs in 1952. The installed capacity of the factory is 3,000 bulbs per day. Production at present is almost at a standstill. It appears that the manufacturers assemblers of automobiles are not purchasing indigenous lamps. Sanghair & Co. manufacture side lamps and tail and stop lamps for Hillman Minx cars and Commer vans. Their capacity for producing side lamps and tail and stop lamps is 10,000 pairs per year.

17. *Cables and wires:*

Several firms appear to be interested in the manufacture of electric cables and wires; but of these, only one firm, viz., Indian Cable Co. Ltd., Calcutta, have furnished information to us. They manufacture rubber insulated cables for the automobile industry and claim to have an annual capacity on single shift basis for 18,000,000 finished yards of rubber insulated cables which can meet all the requirement of the automobile industry in India. Their

actual production in 1951 was 32.2 million finished yards and in 1952, 22.4 million finished yards. They have supplied small quantities to automobile assemblers/manufacturers and also to Dewar's Garage and Engineering Works for the assembly of sample harnesses.

18. *Wire harness:*

The manufacture of this item has been taken up by Dewar's Garage and Engineering Works, Calcutta, who have entered into an agreement with Indian Cable Co. Ltd., Calcutta, for the supply of required wires. Production is still largely in the experimental stage, and samples are reported to be available for all types of vehicles. While wires are obtained from Indian Cable Co. Ltd., braiding, terminal manufacture and terminal fitting are done at the factory of Dewar's Garage and Engineering Works. They have a capacity of over 750 harnesses per month on single shift basis and can, if necessary, increase the capacity by working extra shifts. Production, it is claimed, will be sufficient to meet India's current requirements.

19. *Batteries:*

This important ancillary industry is now well established in India and nearly 18 units with an annual capacity of 534,820 batteries are in regular production. Actual production in 1951 of the 18 manufacturers was 251,584 batteries.

20. *Carbon brushes:*

Carbon brushes are produced by Greaves Cotton & Crompton Parkinson Ltd., Bombay. They supplied 20,000 carbon brushes in 1951 to an automobile manufacturer and a small quantity in 1952. They have also supplied small quantities of this product to automobile dealers and consumers. Though the firm claim to have ample capacity, they have not, however, been able to develop production due to inadequate demand.

V. OTHER COMPONENTS AND MATERIALS

21. *Rubber tyres and tubes:*

These are manufactured by four firms, viz., Dunlop Rubber Co. (India) Ltd., Calcutta, Firestone Tyre and Rubber Co. of India Ltd., Bombay, Goodyear Tyre and Rubber Co. of India Ltd., Calcutta, and India Tyre and Rubber Co. (India) Ltd., Bombay. Their capacity and production of tyres and tubes are sufficient to meet the demand of the indigenous automobile industry. These firms are also collaborating with indigenous producers for the manufacture of rubber components and accessories, and garage equipment which they also market through

their dealers' organisations. The total capacity and production of these firms in 1951 and 1952 were as follows:-

	Capacity	Production*	
		1951	1952
Motor covers and giant covers	913,430	486,373	379,790
Motor and giant tubes	902,930	464,736	343,924

* Figures of production relate to three firms only.

22. Latex foam products:

Dunlop Rubber Co. (India) Ltd., Calcutta, commenced manufacture of Dunlopillo latex foam products in July 1951 and their production covers an extensive range. An appreciable proportion of the Dunlopillo products consists of bus seats, back squabs and other items used in the automobile industry.

23. Other rubber components:

A large number of rubber components other than engine mountings, fan belts and radiator hoses are also being manufactured by National Rubber Manufacturers Ltd., Calcutta, Kadar Rubber Manufacturing Co. Ltd., Calcutta, Travancore Rubber Works, Trivandrum, Rubberex Industries Ltd., Bombay, Associated Industries, Bhavnagar, Swastik Rubber Products Ltd., Poona, Nanco Rubber and Plastics Ltd., Coimbatore, Modak Rubber Products Ltd., Bombay, and Korula Rubber Co. Ltd., Bombay. Among these items are included horn bulbs, wind shield wipers, motor pump connections and other extruded goods, moulded rubber headings, etc.

24. Gaskets:

Cork and oil paper gaskets are being manufactured by General Manufacturing Co., Bombay, who claim to be able to attain a capacity for Rs. 5,000 worth of gaskets per day if they can instal a power press and are assured of a market. Their actual production was approximately of the value of Rs. 50,000 in 1951 and Rs. 45,000 in 1952. Because of the limited demand they are operating only hand presses and locally made dies.

25. Ball bearings:

Ball bearings are manufactured by National Bearing Co. Ltd., Jaipur, who have an annual capacity for 600,000 bearings. A large part of their capacity is being utilised for industries other than the automobile industry but they are in a position to tool up and manufacture every type and size of ball bearings as soon as they receive orders for minimum quantities which would justify manufacture. They have not so far supplied

directly any bearings to any manufacturer or assembler of automobiles. Recently, however, they have received direct orders from one assembling firm for about 7 sizes and these are being manufactured. The reason for their not receiving orders from manufacturers and assemblers of automobiles is stated to be the usual practice of importing bearings as parts of motor vehicles.

26. *Paints:*

A large number of firms manufacture oil and enamel paints, and a few also produce nitro-cellulose paints. Among the firms who have furnished information to us are Addisons Paints and Chemicals Ltd., Madras, Shalimar Paint, Colour and Varnish Co. Ltd., Calcutta, P.C. Chanda & Co. Ltd., Calcutta, and Elephant Oil Mills Ltd., Bombay. We have also received information from Imperial Chemical Industries (India) Ltd., Calcutta, about the capacity and production of their subsidiary Alkali and Chemical Corporation of India Ltd.

Addisons Paints and Chemicals Ltd., have done pioneering work in the manufacture of N.C. lacquers, and their factory is designed to manufacture nitro-cellulose products as well as thinners and synthetic enamels which are largely used as automobile and industrial finishes. They have entered into an agreement with Hardie Trading Ltd., Australia, who are the manufacturers of the well-known Spartan products. The capacity of the factory per month is as follows: colour and clear lacquers, 12,000 gallons; paints and enamel, 1,000 cwts.; varnishes, 10,000 gallons; thinners, 30,000 gallons; Hardi-proof, 6,000 gallons and leather finishes, 500 gallons. Actual production in 1951-52 of these six items was 25,446 gallons, 23,939 cwts., 6,305 gallons, 23,303 gallons, 5,555 gallons and 215 gallons, respectively.

Shalimar Paint, Colour and Varnish Co. Ltd., manufacture nitro-cellulose finish which is one of the most important finishes required by the automobile industry. Their capacity is 4,000 gallons per month and their actual production in 1952 was 15,435 gallons.

P.C. Chanda & Co. Ltd., manufacture paints and lacquers used for painting chassis, underframes and under-surfaces of mud-guards, etc.

Elephant Oil Mills Ltd., manufacture chassis black dipping enamels, enamels for lorry bodies and varnishes. They claim an annual capacity of 50,000 gallons for each of these items. They have supplied only small quantities of paints and varnishes to automobile manufacturers/assemblers.

The Alkali and Chemical Corporation of India Ltd., produce lacquers, thinners, primer surfacer and putty. Their rated annual capacity is 200,000

gallons of all products. The factory commenced production in the second half of 1951 and their production in 1952 was about 100,000 gallons.

27. *Brake fluid:*

Brake fluid according to the information received by us is produced by Addisons Paints and Chemicals Ltd., Madras and Caltex (India) Ltd., Bombay. Addisons Paints and Chemicals Ltd., manufacture Acme super-49 hydraulic brake fluid; their annual capacity is stated to be 20,000 gallons and their actual production in 1951 was 11,894 gallons and in 1952, 29,218 gallons. Caltex (India) Ltd., commenced production in February, 1950. Their annual capacity is 180,000 gallons and actual production was 55,982 gallons in 1951 and 70,260 gallons in 1952.

28. *Aluminium castings:*

These are being produced by the Aluminium Manufacturing Company Ltd., Calcutta, who have a properly equipped foundry with a rated capacity of 60 tons of castings per annum. The firm have a contract with Hindustan Motors Ltd., for the supply of aluminium castings required by them, including clutch housings, tappet covers, water outlet pipes, gear box extension, gear box cover, bonnet hinges and engine sump. As an associate of British Aluminium Company Ltd., they have access to all the technical advice and guidance from the parent firm.

VI. SERVICE EQUIPMENT PARTS

29. *Jacks:*

Five firms, viz., Malleable Iron and Steel Castings Co. Ltd., Bombay, Belgaum Motors, Belgaum, Hindustan Industries and Machine Manufacturing Co. Ltd., Benaras, Union Company (Accessories) Ltd., Madras, and International Engineering Service, Bombay, are interested in the manufacture of jacks. Of these only two firms, viz, Malleable Iron and Steel Castings Co. Ltd., and Belgaum Motors, are manufacturing jacks on a large scale. The capacity of Malleable Iron and Steel Castings Co. Ltd., is flexible and can be extended according to the demand. Actual production of Malleable Iron and Steel Castings Co. Ltd., from February 1951 to December 1952 was 10,000 jacks most of which were sold under contracts with certain rubber companies.

The capacity of Belgaum Motors is 10,000 jacks per annum and actual production in 1951 was 6,130 jacks and in 1952, 2,380 jacks of which 52 were hydraulic jacks.

30. *Hand and foot pumps:*

Three firms, viz., Union Company (Accessories) Ltd., Madras, Hindustan Industries and Machine Manufacturing Co. Ltd., Benaras, and Ahmedabad Star Engineering Works, Ltd., Ahmedabad, are engaged in the manufacture of hand and foot pumps but we have received information from only the first two firms. Union Company (Accessories) Ltd., commenced production from 24th April, 1952. Their annual capacity is stated to be 30,000 pumps. Actual production of hand tyre inflators complete with hose connections during June-December, 1952 was 7,500 and the total sales during the same period were 6,800. No foot pumps were manufactured by them in 1952. Hindustan Industries and Machine Manufacturing Co. Ltd., have an installed capacity for 24,000 hand pumps and 12,000 foot pumps. Actual production of hand pumps was 200 in 1951 and 1,500 in 1952. They supplied 500 pumps in 1952 to Hindustan Motors Ltd. For foot pumps no orders were received from automobile manufacturers/assemblers and, therefore, no production was undertaken.

31. *Tool kits and garage equipment:*

Tool kits for different models and garage equipment like heavy jacks, are being manufactured by Hindustan Industries and Machine Manufacturing Co. Ltd., Benaras, and Simpson & Co. Ltd., Madras.

32. *Non-genuine components and parts:*

Gemco Industries Ltd., Bombay, and S.A. Engineering Works, Bombay, are producing several automobile parts by copying the original parts. The main products of Gemco Industries Ltd., are U spring clamps, centre bolts for springs, shackle bolts, shackle assemblies, petrol tank caps, side mirrors and bushings of all types. S.A. Engineering Works manufacture mainly king pins, spring pins, hangers, thrust ball bearings, king pins, petrol tank and radiator caps, U bolts, centre bolts and small lamps. Gemco Industries Ltd., claim a capacity to utilise 100 tons of steel per year. S.A. Engineering Works claim that they are able to produce parts of the value of about Rs. 15,000 per month or about Rs. 2 lakhs per annum. Both units use only indigenous materials; only in special cases imported steel is obtained.

9. We have referred in the previous paragraph to the various ancillary components and parts which are being manufactured at present. Besides these, there are several others which are not being produced on a commercial scale but the manufacture of which is either in the experimental stage or is only being planned. We have obtained the following information about the principal features of the programmes of manufacture in respect of such components and parts:

Ancillary
industries:
Programmes of
manufacture.

I. ENGINE COMPONENTS

1. Fuel pump diaphragms:

The manufacture of fuel pump diaphragms was undertaken by United Trading Co., in 1914, mainly for the Defence Department and later for both civil and military requirements. Since 1950, however, the manufacture has been suspended due to keen competition from imports from the U.S.A. They have now developed a new formula for manufacture which they state has been tested by the Defence Ministry and has now been patented by Government. They have a plan to produce 150,000 sets of diaphragms per year and gradually to increase the production to 250,000 sets per year by the end of 1954. They do not anticipate any difficulty in selling their products to the producers of motor vehicles.

They do not consider that any foreign assistance or collaboration is necessary for the manufacture of fuel pump diaphragms. The Indian Standards Institution is preparing standards for this product. Raw materials required for its production are available in the country.

National Rubber Manufacturers Ltd., Calcutta, also intend to undertake the production of fuel pump diaphragms in the near future.

2. Radiators (fin and tube type):

Radiators of the fin and tube type are to be manufactured by Rayala Corporation (Madras) Ltd., Madras, for cars, trucks, tractors and industrial equipment. They have a programme for the manufacture of 5,000 radiators per annum and they expect to increase production to 10,000 radiators per annum by the end of 1954. They have stated that their capacity could be increased to 50,000 radiators per annum if there is demand. They intend to negotiate with the producers of motor vehicles for the sale of their products as original equipment and also to sell them in the replacement market.

They have entered into an agreement with Suddutsche K hlerfabrik Julius Fr. Behr., Stuttgart, West Germany, for the manufacture of 'Behr' radiators. The German firm will furnish records and data relating to design, construction, drawings, tools, jigs, etc. They have also agreed to furnish other facilities by way of research, provision of expert advice and necessary training for the employees of Rayala Corporation (Madras) Ltd. Certain raw materials such as copper and brass sheets of prescribed quality, and copper strip will have to be imported.

3. Aluminium pistons, gudgeon pins, cylinder liners (wet), valves:

These items are already on the manufacturing programme of India Pistons Ltd., Madras, who are negotiating with Aluminium Manufacturing Co. Ltd., Calcutta, to obtain aluminium alloy castings for pistons. Production of gudgeon pins and cylinder liners (wet) is expected to start in the near future. Necessary machine tools for the manufacture of gudgeon pins and cylinder liners (wet) are being installed. Manufacture of valves is expected to commence in 1954.

Raw materials for aluminium pistons and cylinder liners (wet) will be obtained wholly from indigenous sources. For gudgeon pins, however, the raw material will have to be imported because even if it were possible to get alloy steel according to specifications, facilities for precision drawing are not available in the country.

4. Valve guides, connecting rod belts and dippers:

These parts were produced by Sanghani Momot Industries, Bombay, who have closed down their factory at present, but may resume production. They were producing these parts along with many others to American standard specifications and were able to sell them not only in the domestic market but also in the markets of neighbouring countries like Burma, Iran, and Africa. They claim to have sold these parts in the Indian market at prices much lower than those of the corresponding imported parts.

5. Diesel fuel injection equipment:

Diesel fuel injection equipment is to be manufactured by Motor Industries Ltd., Madras, in a factory to be set up in Bangalore. Machinery and equipment for the factory have already been ordered and production and planning will be under the direction of an engineer from Robert Bosch of Stuttgart, West Germany, with whom they have entered into an agreement. Production is expected to commence from September, 1953. In the first stage, that is by the end of 1954, they will take up the assembly of fuel injection pumps, complete manufacture of all parts of nozzle holders and filters (except felt inserts); in the second stage, that is by the end of 1957, they will manufacture pump parts, nozzles, delivery valves and nozzle holders; and in the third stage, that is by the end of 1960, they will manufacture complete injection equipment.

The equipment will be manufactured according to the specifications and technique, standards and quality of Robert Bosch but will not bear the name of "Bosch" and will not, therefore, be subject to the same rigid inspection. They will be, however, subjected to close inspection according to the rules of their German associates and for this purpose the services of a Chief Inspector

will be obtained for the first few years from Robert Bosch. Some of the raw materials like round and hexagonal bright drawn cold rolled mild alloy steel bars, round and hexagonal brass bars, bright drawn steel for nozzle holders and filters, and felt inserts for diesel fuel injection filters, will have to be imported.

II. TRANSMISSION AND SUSPENSION COMPONENTS

6. *King pin units, clutch pedal shafts and pins, brake pedal pin, accelerator springs and brake pedal springs:*

All these parts were manufactured by Sanghani Momot Industries, Bombay. They propose to take up their manufacture as soon as they resume production.

III. FRAME AND BODY COMPONENTS

7. *Shock absorbers:*

Shock absorbers are to be manufactured by Armstrong's Patents (India) Ltd., Madras, which are associated with Union Company (Accessories) Ltd., Madras. Their plan for production is 2,900 units (assembly only) in 1952, 31,900 units (partial manufacture and assembly) in 1953 and 1954.

They have entered into an agreement with Armstrong's Patents Co. Ltd., Yorkshire, U.K. Samples are to be sent from time to time to the foreign associates for their inspection and approval. Facilities will be provided at the factory in U.K., for the training of technicians and their U.K. associates will also send their inspector to inspect the factory at Madras. The products will be manufactured according to the standards and quality of Armstrong's Patents Co. Ltd.

The main difficulties anticipated by them are foreign competition and non-availability in the country of many of the raw materials, and multiplicity of types and specifications of parts required for various models produced in India.

8. *Wheels and rims:*

These parts are to be manufactured by the Wheel & Rim Co. of India Ltd., Madras. They claim that the capacity of the projected plant will be sufficient to meet the demand for wheels and rims for all the various types of automobiles in the country. They have entered into an agreement with Firestone Tyre & Rubber Co. of Akron, Ohio, U.S.A., who will render all the technical assistance necessary for the development of the scheme. Samples will be submitted to Firestone Tyre & Rubber Company as and when required for test and approval, and also to the Government of India, if required. Products will be manufactured in accordance with the specifications and

designs drawn by Firestone Tyre & Rubber Company and will bear "Firestone" name. As regards raw materials they have stated that in the initial stages special steels not available in the country will have to be imported.

9. *Brake drums:*

The manufacture of brake drums is proposed to be started by Lakshmiratan Engineering Works, Bombay. Automobile Products of India Ltd., have already made arrangements with them for obtaining supplies of brake drums from them.

10. *Front and rear spring parts and rear axle parts:*

These parts are included among those which Sanghani Momot Industries, Bombay, were manufacturing and which they would take up when they resume operations.

IV. ELECTRICAL EQUIPMENT

11. *Sparking plugs:*

Sparkign plugs are proposed to be manufactured by three firms, viz., Motor Industries Co. Ltd., Madras, Auto Accessories (India) Ltd., Bombay, and Simpson & Co. Ltd., Madras. Motor Industries Co. Ltd., will produce "Bosch" sparking plugs in collaboration with Robert Bosch, Stuttgart, West Germany. According to their programme they will produce 25,000 sparking plugs per month from September, 1953 and they expect their production capacity to increase to 50,000 per month by the end of 1954. In the first stage, that is up to 1954, they will only assemble the sparking plug body. In the second stage, that is by the end of 1957, they will manufacture complete sparking plugs except the porcelain insulator. The products will be manufactured according to the standard specifications of Robert Bosch and will be subjected to rigid inspection in the first few years by the Chief Inspector appointed by their German associates and stationed at their factory. The products will not, however, bear the name "Bosch".

Auto Accessories (India) Ltd., plan to produce K.L.G., sparking plugs for which they have entered into an agreement with Smiths Motor Accessories Ltd., U.K., who are the sole distributors in U.K., of sparking plugs manufactured by K.L.G. Sparking Plugs Ltd. Equipment and technical assistance for manufacture will be provided by their associates in U.K.

Simpson & Co. Ltd., propose to take up the manufacture of Lodge' sparking plugs but the scheme is still in an embryonic stage.

12. *Electric horns:*

Electric horns are to be manufactured by Union Co. (Accessories) Ltd., Madras, United Trading Co., Delhi, and Acme Manufacturing Co. Ltd., Bombay.

Union Co. (Accessories) Ltd., have entered into an agreement with Prima Industries Ltd., Birmingham, U.K. They plan to produce 42 gross electric horns in 1952; 56 gross in 1953; and 70 gross in 1954. Samples of their products will be submitted to their foreign associates for inspection and approval. Certain insulating materials, contact points, special steel, etc., which are not available in the country will have to be obtained from U.K.

United Trading Co. have planned to produce 4,000 sets of electric horns per annum. They have already submitted a sample to the Development Wing of the Ministry of Commerce and Industry for approval. They have not entered into foreign collaboration but they will arrange to maintain the standards of quality and have their products properly tested.

Acme Manufacturing Co. Ltd., are at present experimenting with the production of a suitable electric horn similar to the one used in Chrysler automobiles.

V. OTHER COMPONENTS

13. Brake linings and clutch facings:

The manufacture of brake linings and clutch facings is proposed to be taken up by Peninsular Motor Corporation Ltd., Calcutta, in collaboration with a foreign firm.

10(a) From what has been stated in paragraphs 6-9 above regarding the present position and programmes of manufacture of the automobile industry and ancillary industries, it will be seen that some progress has already been made towards establishing the manufacture of automobiles in India. The evidence tendered before us on behalf of the various interests connected with this industry showed a general consensus of opinion in favour of establishing the automobile industry in India. There was, however, difference of opinion as to whether the industry should be established in one step or step by step. The exponents of the one step method stated that if necessary protection and assistance were given to the firms which have a manufacturing programme, they would be able to manufacture motor vehicles at a reasonable price within a reasonable period and to expand the volume of demand. According to this school, ancillary industries would develop simultaneously with the progress of the automobile manufacture. The advocates of the step by step method expressed the view that the assembly of c.k.d. vehicles imported from abroad should continue until the volume had increased to such an extent that the manufacture of motor vehicles would be economic. The lowering of prices of motor vehicles

by a substantial reduction of the customs duty was in their opinion necessary to increase the volume. According to them, the development should be evolutionary, that is, secondary and auxiliary industries should be established first so that the components and parts, etc., manufactured by them could be bought and used by the manufacturers of motor vehicles. If the pace was rushed, the cost of manufacture of automobiles would go up and this in turn would restrict their use. The divergence of opinion among the exponents of the two methods is due to their approach. The exponents of the first method (one step) believe that they have already crossed the hurdle and, given certain facilities they can succeed in building up a volume which would make it possible for them to manufacture motor vehicles at a reasonable price. The exponents of the second method (step by step) believe in cautious progress and in undertaking manufacture only after the supporting industries have been established. They point out that the low level of purchasing power in India limits the demand for motor vehicles and combined with the heavy capital investment required for the automobile industry it creates a vicious circle of high prices and low volume.

(b) We consider that if reliance is placed on evolutionary process, it may take decades before the manufacture of motor vehicles becomes possible in India. At the present stage of development of the industry, positive measures are required to accelerate its establishment on a sound basis. We are aware that some risk is involved in stimulating the manufacture of motor vehicles by such measures but it would be faced in view of the encouragement hitherto given to the industry by Government, the progress made so far by the firms which have embarked on a manufacturing programme, the large investment made by the public in these concerns, and above all the national benefits accruing from the establishment of the automobile industry. Firstly, there will be considerable saving of foreign exchange. India spent during the five years ended 1951-52, foreign exchanges equivalent to more than Rs. 55 crores and Rs. 37 crores on motor vehicles and motor parts, respectively. A large portion of the exchange could be saved if components and parts were manufactured in India and the saving utilised for the purchase of capital goods and machinery required for the industry. Secondly, the automobile industry will open up new avenues of employment and provide skill and technical knowledge for the establishment of other allied industries, such as tractor manufacture, internal combustion engine manufacture, etc. Thirdly, it will create a demand for products of a large number of industries and accelerate the process of industrialisation. Lastly, in times of national emergency the industry could be switched over to the production of vehicles, etc., required for defence. The automobile industry can in short be described as a vital industry of strategic importance which would reflect the economic prosperity of the country.

The advantages of motor transport which will receive an impetus from the establishment of an automobile industry are too obvious to be mentioned. In a country of vast size like India where contact between villages and towns and between one region and another depends so greatly on rapid communication, motor transport can render invaluable service. For the movement of agricultural produce and raw materials to markets and industrial centres and for the distribution of the products of industry in the countryside, as also for extending social services to villages and providing relief in times of famine or natural calamity, motor transport by its flexibility and speed can play an important part. A well established automobile industry must, therefore, be recognised as an integral part of a sound progressive economy for the country.



सत्यमेव जयते

CHAPTER III - PROBLEMS OF THE INDUSTRY

11. (a) An estimate of the volume of demand for automobiles in the country can be made on the basis of imports of passenger cars and commercial vehicles and the sales of motor vehicles assembled in the country. The Volume of demand: following table gives the imports of motor vehicles from 1922 to Present demand. 1952:-

Year	Passenger cars	Commercial vehicles (vans, trucks and buses)	Total
1922-23	4323	480	4803
1923-24	7984	1044	9028
1924-25	9380	2152	11542
1925-26	12757	4840	17597
1926-27	13197	6343	19540
1927-28	15122	8682	23804
1928-29	19567	12790	32357
1929-30	17399	15306	32705
1930-31	12601	8913	21514
1931-32	7220	4302	11522
1932-33	6201	2576	8877
1933-34	9759	5496	15255
1934-35	14434	9973	24407
1935-36	13590	8470	22060
1936-37	12939	9160	22099
1937-38	15697	15077	30774
1938-39	10988	7860	18848
1939-40	9965	14537	24502
1940-41	5058	19639	24697
1941-42	2854	28355	31209
1942-43	381	6819	7200
1943-44	41	69	110
1944-45	13	7737	7750
1945-46	263	7513	7776
1946-47	10688	8649	19337
1947-48	23197	12217	35414
1948-49	18012	21299	39251
1949-50	7159	11455	18614
1950-51	8349	4807	13156
1951-52	9957	4712	14669

The sales of motor vehicles during the last four years are given below:-

	1949	1950	1951	1952
Passenger cars	8,619	8,278	12,597	8,212
Commercial vehicles	15,436	8,715	9,796	7,503
Grand total	24,055	16,993	22,393	15,715

It will be seen from these figures that the average annual imports in the three pre-war years 1935-36 to 1937-38 were of the order of 25,000 motor vehicles. Assuming that about 20 per cent of these imports were on account of territories now included in Pakistan, the average for India would be 20,000 vehicles. In the four post-partition years, 1948-49 to 1951-52, the average annual imports were 21,500 vehicles, but excluding the imports in 1948-49 which were heavy due probably to pent up demand, the average for the remaining three years works out to only 15,500 vehicles. Taking the whole period of 30 years, it is noteworthy that the volume of imports has remained more or less static in India while it has shown a striking increase in many other countries. As regards sales, the figure for 1949 is somewhat on the high side because of the backlog of pent up demand. It would be better to take the average of the sales for the last three years for estimating the demand. On this basis, the demand works out to 18,367 vehicles. Actually the sales in 1952 were much less than in 1951, but this was probably due to the reduced purchasing power of the people. We consider that a reasonable estimate of the present demand would be 18,000 to 20,000 motor vehicles (passenger cars and commercial vehicles).

(b) The total number of passenger cars and commercial vehicles on roads in 1951 was, according to the figures obtained by us from the Ministry of Transport, 283,000 comprising about 160,000 passenger cars and 123,000 commercial vehicles. If the average life of a passenger car is taken to be 12 years and of a commercial vehicle 10 years, about 13,000 passenger cars and 12,000 commercial vehicles would be required to be replaced every year to maintain the present number of vehicles on the roads. These annual requirements for replenishment of 25,000 vehicles do not take into account the development of roads and road transport envisaged in the Five Year Plan. By the end of the period of the Plan, viz. 1955-56, the national income is expected to go up to about Rs. 10,000 crores or by about 11 per cent in all sectors of economic activity, including agriculture, industry, trade and transport, and a marked expansion or improvement is anticipated leading to a steady enlargement of the supply of goods and services available for satisfying the needs of a growing population. The road development programme itself would involve an expenditure by the Central Government of Rs. 27 crores on national highways and of Rs. 4.24 crores

on certain selected roads and by the State Governments of Rs. 73.54 crores on State roads. The National highways mileage is expected to increase from 11.9 to 12.5 thousand miles and of State roads from 17.6 to 20.6 thousand miles. It is not possible to measure the impact of development during the period of the Plan on road transport, but it is reasonable to conclude that when more is produced and moved over varying distances and when income is augmented, the demand for goods carriers, buses and passenger vehicles would increase.

There are, however, certain factors operating to prevent an increase in demand. It was brought to our notice during the course of the inquiry that private operators were putting off purchases of new commercial vehicles as long as possible owing to the fear that nationalization of road transport might put them out of business at any time. As the total number of vehicles belonging to private operators in May, 1952 was 100,855, it seems impossible for State Governments to find funds within the next five years to nationalise road transport by replacing all the private operators, especially as there are other projects, more important and of higher priority, for which available funds would be required. We think that if State Governments decide upon a policy of suspending further nationalisation of road transport for the next few years, it will remove the fear from the minds of private operators and induce them to purchase new vehicles and extend their services. The annual replenishment would on the basis of an average life of 10 years for a vehicle work out to about 10,000 vehicles. Another factor which limited the demand was the high prices of vehicles. In these circumstances, an estimate of the future demand will be in the nature of a prediction. However, if a favourable climate is created all round the demand for new vehicles might increase to about 25,000 and more within the next three years.

(c) Conflicting evidence was placed before us in regard to the minimum volume required for economic manufacture of a motor vehicle. It was stated by the representative of General Motors India Ltd., that the minimum volume required for break-even point would be 25,000 and that it would not be worthwhile undertaking a programme of manufacture unless there was a minimum volume of 30,000. The representative of the Automobile Products of India Ltd., told us that, with a protective duty of 33 1/3 per cent, an output of 5,000 was sufficient for manufacturing motor vehicles in India at a reasonable price under economical management. The figures given by the representatives of Hindustan Motors Ltd., and Premier Automobiles Ltd., for break-even point were 13,000 (8,000 cars and 5,000 trucks) and 7,500 (2,500 cars and 5,000 trucks), respectively. The representative of Standard Motor Products of India Ltd., stated that a volume of 2,000 would be sufficient for break-even point. Two facts emerge

from these and similar views expressed by others. One is that a large volume of about 30,000 is required for mass production. The other is that with a small volume it is possible to manufacture motor vehicles in India at a reasonable price provided the resources of ancillary industries are properly utilised and the management of the automobile factory is economical and efficient.

(d) Whatever may be the exact volume of demand which would make economic manufacture of automobiles possible in India, there can be no doubt that for

the establishment of the industry on a sound basis and for its future progress, it is essential that the demand should steadily expand in future. India is very backward in motor transport as can be seen from the following figures of registered motor vehicles in some of the countries:-

United States of America	..	51,425,647
United Kingdom	..	3,321,428
France	..	2,635,700
Australia	..	1,523,300
India	..	283,040

The number of persons served by one vehicle in India is on the average 1,270 as against 3 in the U.S.A., 5 in Australia, 15 in U.K., and 16 in France.

Motor transport can also be viewed from another angle, viz., the number of motor vehicles on roads. The following figures give the number of motor vehicles on 1,000 miles of road.

United Kingdom	..	14,874
United States of America	..	12,146
France	..	3,717
Australia	..	1,753
India	..	829

(e) Many witnesses who appeared before us stated that some of the causes retarding the development of motor transport in India were (i) high customs

duties, (ii) inadequate road development, (iii) bad condition of roads, (iv) heavy and varying rates of taxation of commercial motor vehicles by State Governments and (v) restrictions on inter-State movement of commercial motor vehicles.

The motor vehicle Taxation Inquiry Committee has in its report referred to these questions and we do not, therefore, wish to go into them here, but we suggest that early action may be taken by Government to implement the recommendations made by the Committee in regard to these matters with a view to ensuring an enlarged and steadily expanding volume of demand for motor vehicles.

(f) For the economic manufacture of automobiles it is not only necessary to have a minimum volume of demand but also to limit the demand to a minimum number of types and models which are considered essential for the requirements of the country. The evidence tendered before us Reduction of types and models of motor vehicles, generally supported the reduction of types and models so as to allow a larger volume of demand to manufacturers of automobiles as well as ancillary industries. We have discussed this question in all its aspects with our Automobile Expert and we recommend that there should be four types of passenger cars and four types of commercial vehicles for civilian requirements in India.

Passenger cars

(1) Baby car up to 1.2 litre:

This type of vehicle is cheaper not only in respect of initial cost, but also cheaper to run. Running cost is an important consideration in the purchase of a motor vehicle, especially for a person with very limited resources. This type of car is generally used by professional and business persons who drive their own vehicles. The following models of this type are being assembled:-

Premier Automobiles Ltd.	Fiat	0.6 litre	
	Topoline		
Addison & Company Ltd.	Morris Minor	0.9	"
Peninsular Motor Corporation Ltd.	Renault	0.8	"
	Morris Minor	0.9	"
French Motor Car Company Ltd.	Morris Minor	0.9	"
Ford Motor Company of India Ltd.	Prefect*	1.2	"

* (This model is included in this type in spite of the fact that its litre capacity is 1.2, because it is similar to other vehicles in this type in respect of comfort, performance and price.)

The sales of this type of cars during the last three years were 1,463 in 1950, 2,892 in 1951 and 1,514 in 1952, the average for the three years being 1,956.

(2) Light car 1.2 to 1.5 litre:

This type of car provides more comfort and speed than a baby car. Persons who have more resources generally go in for this type of vehicle. The following models of this type are being assembled:-

Ashok Motors Ltd.	Austin A40	1.2 litre
Automobile Products of India Ltd.	Hillman Minx	1.3 "
Dewar's Garage and Engineering Works	Rover	1.5 "
	Singer	1.5 "
General Motors India Ltd.	Vauxhall	1.5 "
Hindustan Motors Ltd.	Hindustan 14	1.5 "
French Motor Car Company Ltd.	Wolseley	1.5 "
	Riley	1.5 "
Ford Motor Company of India Ltd.	Consul	1.5 "

The sales of this type of cars during the last three years were 4,686 in 1950, 5,694 in 1951 and 3,933 in 1952, the average for the three years being 4,771.

(3) Medium car 1.8 to 2.5 litre:

This type of vehicle offers higher comfort and speed than a light car. The following models of this type are being assembled:-

Dewar's Garage and Engineering Works	Rover	2.1 litre
Standard Motor Products of India Ltd.	Standard Vanguard	2.1 "
Ashok Motors Ltd.	Austin A70	2.2 "
French Motor Car Company Ltd.	Morris 6	2.2 "
Mahindra and Mahindra Ltd.	Jeep	2.2 "
General Motors India Ltd.	Vauxhall	2.3 "
Ford Motor Company of India Ltd.	Zephyr	2.3 "

The sales of this type of cars during the last three years were 1,102 in 1950, 1,861 in 1951 and 1,697 in 1952, the average for the three years being 1.553 (inclusive of cars supplied to the army).

(4) Big car more than 2.5 litre:

This is a high powered car and offers more accommodation, comfort and speed than a medium car. The following models of this type are being assembled:-

Hindustan Motors Ltd.	Studebaker	2.8 litre
	Champion	
General Motors India Ltd.	Chevrolet	3.6 "
	Pontiac	3.9 "
	Oldsmobile	4.2 "
	Buick	4.3 "
Ford Motor Company of India Ltd.	Custom	3.9 "
	Mercury	4.2 "

Peninsular Motor Corporation Ltd.	Hudson	3.8 litre
Premier Automobiles Ltd.	Dodge	3.6 "
	De Soto	3.6 "
	Plymouth	3.6 "
Ashok Motors Ltd.	Austin A125	4.0 "

The sales of this type of cars during the last three years were 1,027 in 1950, 2,150 in 1951 and 1,068 in 1952, the average for the three years being 1,415 (inclusive of cars supplied to the army).

Commercial vehicles

(1) Light van up to 1 ton:

This type of vehicle is used for transport of goods in towns and rural areas where distance is small for distribution of goods to customers. These vehicles can be built either by using the chassis of passenger cars and putting bigger springs and tyres to the rear axle or by using the main assemblies of passenger cars and fitting them into special and stronger chassis. In the former case the pay load will not exceed 0.6 ton and in the latter case the pay load up to 1 ton may be reached.

The following models of this type are being assembled:-

Addison & Company Ltd.	Morris Commercial
Ashok Motors Ltd.	Austin A40
Automobile Products of India Ltd.	Commer
Dewar's Garage and Engineering Works	Land Rover
Ford Motor Company of India Ltd.	Ford
French Motor Car Company Ltd.	Morris Commercial
General Motors India Ltd.	Chevrolet G.M.C.
Hindustan Motors Ltd.	Studebaker
Mahindra & Mahindra Ltd.	Jeep
Peninsular Motor Corporation Ltd.	Morris Commercial
Premier Automobiles Ltd.	Dodge
Standard Motor Products of India Ltd.	Standard

The sales of this type of vehicles during the last three years were 1,658 in 1950, 1,975 in 1951 and 1,268 in 1952, the average for the three years being 1,634.

(2) *Light truck 1.5 to 2 ton:*

The carrying capacity of this type of vehicle would be greater than that of a light van and the engine of medium type of car could be used for this truck. The following models of this type are produced:-

Ashok Motors Ltd.	Austin
Automobile Products of India Ltd.	Commer
	Karrier
French Motor Car Company Ltd.	Morris Commercial
General Motors India Ltd.	Chevrolet
	G.M.C.
	Bedford
Peninsular Motor Corporation Ltd.	International Harvester
	Morris Commercial
Ford Motor Co. of India Ltd.	Ford
Hindustan Motors Ltd.	Studebaker

The sales of this type of vehicle during the last three years were 1,083 in 1950, 1,974 in 1951 and 1,313 in 1952, the average for the three years being 1,457.

(3) *Medium truck - 3 ton:*

The main vehicle for goods transport will be of this type. These vehicles are generally of American origin, are high powered (90 to 120 B.H.P.) and have high-speed petrol engines, which are basically designed for passenger cars. The maintenance costs of these vehicles are rather high.

A 3 ton truck with an engine of 75 to 120 B.H.P. and tyres 7.50-20 should be included in this type.

The following models of this type are being assembled:-

Ashok Motors Ltd.	Austin
Automobile Products of India Ltd.	Commer
Dewar's Garage and Engineering Works	Albion
Ford Motor Co. of India Ltd.	Ford
French Motor Car Company Ltd.	Morris Commercial
General Motors India Ltd.	Chevrolet
	G.M.C.
	Bedford
Hindustan Motors Ltd.	Studebaker

Peninsular Motor Corporation Ltd.

Premier Automobiles Ltd.

International Harvester

Morris Commercial

Dodge

De Soto

Fargo

The sales of this type of vehicle during the last three years were 3,942 trucks and 749 buses in 1950, 3,956 trucks and 359 buses in 1951, 3,131 trucks and 1,251 buses in 1952, the average for the three years being 3,676 trucks and 786 buses (inclusive of trucks supplied to the army).

(4) *Heavy truck - 5 ton:*

The carrying capacity of this vehicle is much higher than that of a 3 ton truck. This truck can be used only in areas where roads can bear the heavy load and the use is economic.

There is some confusion as to the meaning of the term '3 ton truck' or '5 ton truck'. The expression '3 ton truck' or '5 ton truck' means that the vehicle can carry on a normal platform body 3 or 5 long tons or what is practically the same, 3 or 5 metric tons, respectively. This terminology has become customary because the customer is mostly interested in the pay load which he can transport on a vehicle. But from a technical point of view, it is not very correct. The exact technical significance is only in regard to the carrying capacity of the chassis without body or the gross vehicle weight. This is fixed on the basis of the design of the vehicle, whereas the actual pay load of the vehicle depends upon the weight of the body which may be different depending, for instance, on whether it is a platform body or a case body. To distinguish a 3 ton truck from a 5 ton truck, it would be best to make the gross vehicle weight as the basis.

As regards buses, the practice in other countries is that so far as production is concerned, buses should be as closely connected with the corresponding trucks as possible. The frame, springs and sometimes the steering wheel will be different. But the other major assemblies will be about the same. The types of buses should, therefore, be as follows:-

Light bus, 1.5 to 2 ton, licensed to carry 20 passengers. Medium bus, 3 ton, licensed to carry 25 to 35 passengers. Heavy bus, 5 ton, licensed to carry more than 35 passengers.

The following models of this type are being assembled:-

Ashok Motors Ltd.	Leyland
Automobile Products of India Ltd.	Commer
Dewar's Garage and Engineering Works	Albion
Ford Motor Company of India Ltd.	Ford
Mahindra & Mahindra Ltd.	Guy
French Motor Car Company Ltd.	Morris Commercial
General Motors India Ltd.	G.M.C.
	Bedford
	Chevrolet
Peninsular Motor Corporation Ltd.	International Harvester
Premier Automobiles Ltd.	Dodge
	De Soto
	Fargo

The medium type of vehicles have either petrol or diesel engines. The heavy type of vehicles have almost exclusively diesel engines. The sales of this type of vehicle during the last three years were 214 trucks and 1,069 buses in 1950, 163 trucks and 1,369 buses in 1951 and 210 trucks and 330 buses in 1952, the average for the three years being 196 trucks and 923 buses.

(g) From the point of view of production, it is most essential that the army demand should be combined with the civilian demand, especially as the army is the biggest single customer in the country. From the strategic point of view also it is important that the civilian and army types should be combined so that a minimum number of chassis and major assemblies are required for the production of civilian as well as army vehicles. In times of emergency, the manufacturing capacity can be switched over as far as possible for army vehicles and many of the vehicles used by civilians can be requisitioned for army purposes. Spare parts and repair service of these vehicles can be efficiently handled only if the civilian vehicles correspond to army vehicles as much as possible. It would, however, be necessary to make certain adjustments for combining the civilian and army types of motor vehicles.

We have discussed the requirements of the army in regard to motor vehicles with the representatives of the Ministry of Defence. The necessity for combining the civilian and army demands from the point of view of economic production was explained to them. They agreed to examine the proposals with a view to combining the army types with the civilian types so as to enable the manufacturers to use the same tools and equipment as far as possible.

12. (a) The basic pre-requisite for the development of ancillary industries, viz., sufficient volume of demand to sustain economic manufacture, is the same as in the case of the main industry. The present underdeveloped state of the ancillary industries in India may be attributed largely to the underdeveloped character of the main industry and both of them to the common factor of insufficient consumer demand. The representatives of several ancillary industries who appeared before us complained of lack of large and continuous orders for their products from the manufacturers/assemblers of automobiles and assured us of their ability to supply parts which would compare favourably with the imported products in quality and price provided large orders were placed with them. While we are of the view that the various measures taken to promote the development of the main industry will also stimulate the development of ancillary industries, we consider it would be desirable to examine carefully certain special aspects of the ancillary industries.

(b) The willingness of the automobile manufacturers/assemblers in India to purchase the products of ancillary industries as original equipment depends on whether (i) the quality is satisfactory, i.e., whether the product is up to the specifications, (ii) the agreement with the foreign associate permits the use of local product, and (iii) the price is comparable with the allowance he will get from the foreign associate by deleting the part from the imported pack. During the inquiry we were informed that even when the first condition is satisfied and the second does not preclude the use of domestic product, the third condition is very difficult to fulfil because there seems to be no clearly defined relation between the cost of manufacture of the imported part and the allowance given for its omission or deletion. This last consideration would, therefore, seem to offer a serious obstacle to the use of the products of certain ancillary industries as original equipment. We have carefully considered this matter and reached the conclusion that in several cases the effect of substituting the domestic product for the imported product on the price of the complete vehicle may not be appreciable. We, therefore, recommend that the automobile manufacturers should, as far as possible, purchase the products of ancillary industries in India for use as original equipment, provided the quality is found to be satisfactory.

(c) We are required by the terms of reference to examine the manufacturing programmes of the industries engaged in the production of essential components for the Hindustan Motors Ltd., and Premier Automobiles Ltd., and to report whether they are technically sound and their implementation would result in the manufacture of vehicles at a price which would permit of an expanding demand. In paragraphs 8 and 9 above we have stated the

principal facts relating to the present position of the ancillary industries already established and the manufacturing programmes of industries which are proposed to be set up. We think that it would be difficult to arrive at a general conclusion in regard to all the ancillary industries which differ considerably in their technique and equipment and in the state of development reached by them. It would be necessary to examine the case of each industry separately with a view to assessing its technical soundness and determining the fair ex-works price of its products.

(d) Although the ancillary industries in India are in an early stage of development and deserve suitable protection and assistance, we would like to emphasize the importance of taking steps from the very beginning to prevent haphazard and unregulated growth. The number of units to be set up and the total capacity of each industry should be correlated to the actual or potential demand for its products. This will prevent excessive multiplication of units and undue expansion of capacity in anticipation of demand and avoid waste of resources.

(e) The various ancillary industries which have furnished information to us have claimed protection or assistance in various forms such as abolition, reduction or refund of import duty on raw materials used by them, maintenance or increase of import duty on corresponding foreign products and imposition of import restrictions or complete import ban. Some of the industries have also complained of prejudice against their products. We have indicated above in a slightly different context that the case of each industry will have to be examined separately before any conclusion can be reached or recommendation made about the eligibility of the industry for protection, the quantum of protection required and the nature of protection or assistance which should be given. We have already carried out cost investigations into the factories manufacturing leaf springs, piston rings, cushion springs and hand operated tyre inflators and propose to examine their cases for protection or assistance separately. If any other ancillary industries wish their claim to protection or assistance to be considered, we suggest that they should apply in the usual manner.

(f) We have at a later stage in the Report recommended the establishment of machinery for the development of the automobile industry. This machinery would also be entrusted with the task of promoting the development of ancillary industries in India on sound lines.

(g) No programmes for the manufacture of important components such as carburettors, fuel pumps, fuel filters, air cleaners, copper-asbestos gaskets, clutches, hydraulic brakes, steering wheels and instruments have been furnished

to us and it may be presumed that none have been thought out so far. We understand that foreign manufacturers of some of these components might be prepared to collaborate with Indian firms for the manufacture of such components. We suggest that Government should consider sympathetically any such proposals received by them.

13. We have carefully considered the question of granting protection for the development of automobile industry in India. We have taken into account the assessment of the technical aspects of the industry made by our Automobile Expert. We have also examined the Reports submitted by our Cost Accounts Officers after carrying out the cost investigations into Hindustan Motors Ltd., and Premier Automobiles Ltd. We are forwarding separately the Reports submitted to us by Mr. W.R. Vorwig and the Cost Accounts Officers as confidential documents.

Form of
protection to
the industry.

We are of the opinion that unless protection in suitable form is granted to the automobile industry in the present stage of its development and other measures are taken for its encouragement, it cannot be established on sound basis and it is likely that firms which have embarked on a manufacturing programme will have to face serious difficulties leading to a possible closing down of their plants. In view of the importance of the industry to the country's economy and defence, it is essential that suitable measures are adopted to mitigate these uncertainties and risks and to ensure rapid development of the industry. In this connection, we have examined what would be the best method of giving protection. We considered the question of granting a subsidy to the industry to enable it to sell its products at a price which would permit of expanding demand until such time as the industry is able to effect the necessary reduction in its costs. Apart from the fact that we are making proposals later on to provide internal competition which might make subsidy unnecessary, it is difficult to estimate in the absence of accurate cost data the extent of subsidy required by the manufacturing firms, particularly Hindustan Motors Ltd.; to enable them to sell their vehicles at prices at which they can expand their market. There is no doubt that there is a prejudice in favour of foreign motor vehicles produced by pure assemblers. Hindustan Motors Ltd., have been able to overcome that prejudice to some extent by keeping their prices low; and if they continue to do so, it is possible that they would be able to overcome it fully within a short period. A much larger output than at present would, however, be necessary to enable them to keep down the prices of motor vehicles manufactured by them. At present, therefore, it is not only difficult to determine the amount of subsidy that would be required but also to anticipate the period for which its continuance would be necessary. If subsidy is ruled out as a method

of protection, we have to consider the other two methods, namely, protective duty and import control.

A section of the industry has asked for an increase in the present rate of customs duties with apparently twofold object. Firstly, it would raise the price of motor vehicles produced by pure assemblers so high that there would hardly be any demand for them. Secondly, it would stimulate manufacturing firms to take up the manufacture of components on an increasing scale and at a rapid pace. We are unable to support this proposal. We are informed that Hindustan Motors Ltd., have so far manufactured components and parts which have enabled them to effect an appreciable reduction in the c.i.f. price of Hindustan 14 car. A motor vehicle consists of some thousands of parts and it is not possible for any automobile manufacturing firm to manufacture all the parts. Besides, the manufacture of a motor vehicle up to 50 or 60 per cent of the c.i.f. price cannot be achieved within a short period of one year or so and the import of some of the components (for instance, body panels) will have to be continued for some years to come. If the duty is enhanced as requested even in respect of only components included under item 75(10) of the Indian Customs Tariff Schedule, the price of a passenger car manufactured in India will be higher than at present for at least the next two years or so. This does not take into account the possible rise in the prices of passenger cars due to the increased manufacture of components. The position will be worse in the case of trucks as the manufacture of components has not yet been started. The result will be that, instead of an increase in the demand, there will be a severe setback due to the rise in prices of passenger cars as well as commercial vehicles. The prices of spare parts will also rise making the maintenance and repairs of old motor vehicles more costly. We do not agree that an increase in duty will stimulate manufacturing firms to take up the manufacture of components on an increasing scale and at a rapid pace. In the meantime their business suffers seriously owing to the rise in prices of motor vehicles due to the imposition of very high rates of duty. The important issue is how to increase the demand for motor vehicles. The answer seems to be in the reverse direction; that is, in the reduction of protective high rates of duty. We have examined this matter further in paragraph 10 below.

The other method is to continue the existing import restrictions in a more intensive form and to increase the import quota of manufacturers by giving weightage according to the progress made by them in the manufacture of components, or in other words, to allocate a high proportion of foreign exchange to them. In view of the complexities of the situation, we have not

this method which aims at distributing a large proportion of the volume of demand among the manufacturing firms is likely to offer a greater scope to the manufacturers for keeping their prices low and for increasing their sales. We have gone fully into this matter in paragraph 14 below.

14. (a) It was in 1921 that motor vehicles were first included in the schedule of luxury goods and an import duty of 20 per cent *ad valorem* was levied on them. A lower duty of 11 per cent *ad valorem* was, however, levied on buses and lorries and their accessories. The duties were raised in 1922 to 30 per cent *ad valorem* on cars and their accessories and 15 per cent *ad valorem* on buses and lorries and their accessories. In 1927-28 the rate of duty on motor cars and their accessories was reduced to 20 per cent *ad valorem* but was again raised in 1932 to 37½ per cent *ad valorem* on cars and 25 per cent *ad valorem* on buses and lorries. In 1942, the standard rate was raised to 45 per cent *ad valorem* and 30 per cent *ad valorem* respectively, and continued at this level till 1949 when the standard rate of duty on motor cars and their accessories was raised to 60 per cent *ad valorem* (standard) and 54 per cent *ad valorem* (preferential) on motor cars and 30 per cent *ad valorem* (standard) and 21 per cent *ad valorem* (preferential) on commercial vehicles. They were revised in March 1950 when the components and parts of motor vehicles were classified for tariff purposes into three categories. The first category consisted of components and parts which were being manufactured in India while the second category consisted of components and parts likely to be manufactured in the next two years. The third category included components and parts other than those included in the first and second categories. The standard rates of duty were 60 per cent, 90 per cent and 30 per cent *ad valorem* on components and parts in the first, second and third categories, respectively, preferential rates being 54 per cent, 84 per cent and 24 per cent, respectively. The distinction between motor cars and commercial vehicles in the matter of assessment of their components and accessories to duty was abolished. This obviated the possibility of certain car components being imported as truck components at the lower rate of duty. In pursuance of an assurance given by Government in the course of the debate in Parliament on the revision of import duties, an Automobile Expert Committee went into the question of duties in respect of different categories. The revised classification of components and parts for purposes of duty as recommended by the Committee was accepted by Government in March 1951. A surcharge of 5 per cent was levied on all rates of duty with effect from 1st March, 1951. The margin of preference in respect of imports from U.K., was reduced from 6 per cent to 3 per cent *ad valorem* in accordance with negotiations under the General Agreement on Tariffs and Trade. The reduced margin applied only to articles adapted for use as parts and accessories of motor cars including taxi cabs. For arti-

cles not so adapted, a margin of 7½ per cent *ad valorem* has been maintained. The existing rates of duty on automobile components and parts are given in Appendix X.

(b) For comparison, the rates of customs duty levied in some of the foreign countries are given below:-
Rates of import duty in other countries.

Canada	: 27½ per cent <i>ad valorem</i> on cars as well as commercial vehicles, most favoured nation tariff being 17½ per cent.
Finland	: 14 per cent <i>ad valorem</i> on cars and commercial vehicles.
France	: 30 per cent <i>ad valorem</i> on cars as well as on other motor vehicles.
West Germany	: 38 per cent <i>ad valorem</i> on cars and commercial vehicles.
Italy	: 35 to 45 per cent <i>ad valorem</i> according to different types of cars and commercial vehicles.
Sweden	: 15 per cent <i>ad valorem</i> on cars.
United Kingdom	: 33-1/3 per cent <i>ad valorem</i> on cars and commercial vehicles, preferential rate being 22-2/9.
United States	: Commercial vehicles of certain value 25 per cent <i>ad valorem</i> full rate, and 12½ per cent <i>ad valorem</i> reduced rate; 10 per cent <i>ad valorem</i> on all other motor vehicles.

It will be seen that in all these countries, the rates of customs duty are much lower than in India.

(c) If the figures of imports of motor vehicles into India from 1922 onward are examined, with reference to the changes in the rates of import duty it will be observed that generally whenever the duty was raised it was followed by a fall in imports. Apart from the high incidence of duty, we have found that the present classification has not served its purpose. There is reason to believe that it affords scope for importing components and parts subject to a higher rate of duty by paying a lower rate, as it is impossible for the customs staff to check each and every item of the package in which components are received. Excepting Hindustan Motors Ltd., and Premier Automobiles Ltd., and some manufacturers of components, the consensus of opinion was against the continuance of the existing rates of duty. It was emphasised by many witnesses that the present high rates were responsible in a large measure for poor sales of motor vehicles. The present prices of motor vehicles are very high and beyond the reach of many persons who would like to buy them. This is particularly so in the case of trucks, the prices of which have risen considerably owing to the increase in the duty from 30 per cent to an average of 54 per cent in the case of U.K. trucks and to about 60 per cent in the case of American trucks. There is a great need for more trucks owing to the increasing activities, but so long

as prices remain at the present level, there seems little prospect of any increase in the volume of new trucks. There is also one strong reason why the present rates should be revised. The rates of duty are the same whether for original equipment or for spare parts with the result that users of old motor vehicles whose number is very large, have to pay high rates of duty for their spare parts the c.i.f. prices of which are much higher than those of original equipment. The duty was apparently raised to give protection to the manufacturers of motor vehicles and components. There is, however, no clear evidence that the purpose for which the duty was enhanced has been fulfilled. Hindustan Motors Ltd., have not been able to advance their sales to any great extent on account of the protection extended to them by high rates of duty. It does not seem fair that high rates of duty should be levied on components and parts which are not being manufactured and about which it is not known whether they are likely to be manufactured within the next two years. The possibility of levying lower rates only on spare parts has been examined by us, but we find that such a scheme will provide scope for importing original equipment as spare parts. After considering all these factors, we have come to the conclusion that the present classification under items 75(9), 75(10), 75(11) and 75(12) of Indian Customs Tariff Schedule should be abolished and a standard rate of 40 per cent inclusive of surcharge (the preferential rate for U.K., being adjusted accordingly) should be levied on all components and parts. We should have liked to propose a reduction up to 30 per cent, that is, the rate which was in force in 1950 in the case of commercial vehicles, but as there is a possibility that components and parts of cars would be imported as components and parts of trucks, owing to a lower rate of duty, we have not thought it necessary to do so. So far as passenger cars are concerned, we do not have sufficient data to show whether a rate of 40 per cent would include an element of protection and if so, to what extent. The question of reducing the duty still further could, therefore, be considered only when definite data are available in the course of the next two years.

(d) We are aware that a reduction of duty to a flat rate of 40 per cent would entail on a rough calculation a loss of revenue between 3 and 4 crores of rupees. The present overall duty has placed an excessive burden on the consumers, especially the users of commercial vehicles and spare parts and a reasonable relief is due to them. Besides, as the manufacture of components and parts in India progresses, the revenue duty from the customs duty is bound to decrease considerably. We consider that a substantial loss of revenue from customs duty is inevitable with the establishment of the automobile industry in India but there is reason to believe that the loss will be compensated in course of time by the additional revenue derived from the

establishment of the automobile industry and other allied industries and the improvement in the economic conditions of the people following from it.

(e) We have considered whether a reduction in customs duty will affect adversely the manufacturing firms. We made an attempt to build up the cost of manufacture of Hindustan 14, but in the absence of a scientific system of costing it has not been possible to arrive at the cost of production on the basis of the present manufacture with any degree of accuracy. Our cost examination has, however, shown that the c.i.f. price, customs duty and price of tyres and tubes of Hindustan 14 car add up to about Rs. 6,081. To this have to be added manufacturing and other expenses, depreciation, interest on working capital, return on block and amortisation of special machinery for arriving at the ex-works price. C.i.f. price and customs duty depend upon the components imported and the two amounts will diminish as the manufacture of components increases progressively. Similarly, the manufacturing expenses will also be less as the output increases.

It is not possible to ascertain exactly as to what the increase in the cost of manufacture of components in India would be as compared with the cost of manufacture of similar components in the U.S.A., or U.K. *Prima facie*, two factors, namely, the lower prices of iron and steel which form the bulk of the raw material, and the lower wages of workers, should operate in favour of the lower cost of manufacture. There are, however, other factors which nullify the advantage of these two factors. They are the higher price of plant, tools, machinery and equipment, lack of adequate technical knowledge and training of workers, higher cost of imported raw materials, etc. It has been established that the cost of manufacture is much higher than the deletion allowance or allowance for non-supply given by the associate companies in respect of components deleted from c.k.d. packages. It is, therefore, obvious that, so long as pure assemblers continue to produce motor vehicles, it will be impossible for the progressive manufacturers to compete with them owing to the higher cost of production resulting from a low volume and the loss entailed due to deletion allowance being much less than the cost of production of the original equipment. Besides, the installed capacity of the factory of Hindustan Motors Ltd., is 18,000 as against a small portion of the market coming to their share. In these circumstances, it is evident that Hindustan Motors Ltd., will not be able to manufacture a motor vehicle at a price equal to or lower than the price at which they are selling Hindustan 14 at present unless they get a much larger volume of demand.

15.(1) Our examination of manufacturing programmes in paragraph 7 above has shown that excepting Hindustan Motors Ltd., and Premier Automobiles Ltd., the three other firms who are recognised as manufacturers by **Import arrangements.** Government have made little or no progress in their programmes of manufacture. We do not, however, think that it would be fair to treat these three firms on a par with pure assemblers. Two of them have taken steps to implement their programmes, while the third is in a position to undertake manufacture of motor vehicles. For purposes of allocation of foreign exchange, therefore, they should be distinguished from assemblers who have made no efforts to undertake the manufacture of motor vehicles in spite of the warning given by Government.

We consider it desirable from the standpoint of development of the industry that the import arrangements and allocation of foreign exchange should be examined separately for the main types of vehicles, viz., baby cars, light and medium cars, big cars and commercial vehicles.

(ii) No firm has submitted so far any programme for manufacturing a baby car. As we consider that this type of vehicle is necessary, we recommend that **Baby cars.** foreign exchange should be allocated to the existing assemblers for importing 1960 units (motor vehicles) in c.k.d. condition for one year on the basis of their average sales for the last three years. Ashok Motors Ltd., had a programme for manufacturing Austin A10, but owing to the negotiations that were pending between Nuffields and Austins in regard to their amalgamation, no progress could be made by them so far in their programme of manufacture. In fact owing to the above development, they have been compelled to give up this programme and they have now requested that they should be permitted to undertake the manufacture of a baby car. The volume of demand for a baby car is about 2,000 per year, but this is capable of expansion if the price is kept lower than at present. If, therefore, Ashok Motors Ltd., submit a programme for the manufacture of Austin A7 cars for a period not exceeding four years with an estimate of the cost of production, their request should be considered by Government and permission given to them to undertake the manufacture of Austin A7 passenger cars, according to a phased programme approved by them. If the proposal submitted by Ashok Motors Ltd., for the manufacture of Austin A7 car does not materialise, the allocation of foreign exchange should continue to be made on the above basis after one year.

(iii) As regards light car, Hindustan Motors Ltd., and Automobile Products of India Ltd., have a manufacturing programme. Hindustan Motors Ltd., have made **Light and medium cars.** considerable progress in regard to the manufacture of components while the progress made by Automobile Products of India Ltd., has so far been negligible. We should have preferred to concentrate

the manufacture of each type of vehicle with a single firm, in this case Hindustan Motors Ltd., but as the programme of Automobile Products of India Ltd., has been approved by Government and steps have been taken by them to implement it, we think it would be fair to allow them also to manufacture this type of car. Standard Motor Products of India Ltd., whose manufacturing programme has been approved by Government and who have implemented it so far, are producing Standard Vanguard, which is a vehicle of the medium type.

We think that from the point of view of manufacture, it is desirable to combine the volume of demand for the light and medium types and we recommend that foreign exchange should be allocated to the three manufacturing firms for importing the following number of units (motor vehicles) in c.k.d. condition:-

Hindustan Motors Ltd.	Hindustan 14	4,000 units.
Automobile Products of India Ltd.	Hillman Minx	1,000 units.
Standard Motor Products of India Ltd.	Standard Vanguard	500 units.

In making this recommendation we have taken into account the sales of the above three manufacturing firms for the last three years. We have proposed a specially high weightage in favour of Hindustan Motors Ltd., because of the substantial progress made by them in the manufacture of components. Mahindra and Mahindra Ltd., are supplying jeeps to the army. Foreign exchange sufficient to import the number of units required by the army and 400 units for civilian requirements of this special type of vehicle should be allocated to them.

(iv) As regards big car, Hindustan Motors Ltd., and Premier Automobiles Ltd., have a manufacturing programme and the manufacture of this type of vehicle should therefore be concentrated with these two firms. The total demand for big cars on the basis of the sales for the last three years would be about 1,400. We recommend that in view of the progress made by Hindustan Motors Ltd., and Premier Automobiles Ltd., in their programme of manufacture of Studebaker and Dodge cars respectively, foreign exchange should be allocated to each of them for importing 600 units (motor vehicles) in c.k.d. condition.

(v) As regards commercial vehicles, Hindustan Motors Ltd., and Premier Automobiles Ltd., have a manufacturing programme. The programmes of manufacture of motor vehicles submitted by Automobile Products of India Ltd., and Ashok Motors Ltd., include the manufacture of commercial vehicles. Commercial vehicles. Standard Motor Products of India Ltd., did not include manufacture of commercial vehicles in the programme submitted by them to Government. They have now completed negotiations for manufacturing Seddon diesel trucks. In view of the fact that hitherto the manufacture of commercial vehicles did not figure in their programme, we think that the request now made by them need not

be considered. There should, however, be no objection to their manufacturing vans, provided no extra foreign exchange is allocated to them for this purpose. Only the above four firms should be allowed to manufacture commercial vehicles. As Hindustan Motors Ltd., and Premier Automobiles Ltd., have made considerable progress in installing and ordering necessary plants, tools and machinery, they should be given substantial weightage in the allocation of foreign exchange. Automobile Products of India Ltd., and Ashok Motors Ltd., should also be given some weightage in order to enable them to take up the manufacture of commercial vehicles. They should, however, be called upon to submit their detailed programmes before allocation of foreign exchange is made to them on a weightage basis. In case they fail to submit within a reasonable time a detailed programme for three years in accordance with the scheme recommended by us, no weightage should be given to them in the allocation of foreign exchange and they should be treated like pure assemblers.

We think that from the point of view of manufacture it is desirable to combine the volume of demand for the van, light truck and medium truck and bus types, and we recommend that foreign exchange should be allocated to the above four manufacturing firms as under, subject to what we have stated in the case of Automobile Products of India Ltd., and Ashok Motors Ltd.

<i>Hindustan Motors Ltd:</i>	Foreign exchange for importing 2,000 units (commercial vehicles) in c.k.d. condition.
<i>Premier Automobiles Ltd:</i>	Foreign exchange for importing 2,000 units (commercial vehicles) in c.k.d. condition.
<i>Automobile Products of India Ltd:</i>	Foreign exchange for importing 500 units (commercial vehicles) in c.k.d. condition.
<i>Ashok Motors Ltd:</i>	Foreign exchange for importing 500 units (commercial vehicles) in c.k.d. condition.

Foreign exchange should be allocated to Mahindra and Mahindra Ltd., to supply the requirements of the army in regard to jeep vans. As there is a special demand for jeep and land rover vans, foreign exchange should be allocated to Mahindra and Mahindra Ltd., and Dewar's Garage and Engineering Works for 100 and 400 units in c.k.d. condition respectively for civilian requirements.

(vi) As regards pure assemblers of light, medium and big cars and commercial vehicles of van, light truck and medium truck and bus types, we recommend that
 Pure assemblers. subject to the special quotas proposed in the case of Mahindra and Mahindra Ltd., and Dewar's Garage and Engineering Works in

sub-paragraphs (iii) and (v) above, foreign exchange should be allocated to them on the basis of 25 per cent. of their average annual sales during the last three years, viz., 1950, 1951 and 1952.

(vii) As regards heavy trucks and buses, the total volume of demand on the basis of sales during the last three years is 196 trucks and 925 buses. As there is no manufacturing programme for this type of vehicle, we recommend that foreign exchange should be allocated to the existing assemblers on the basis of their average annual sales during the last three years, viz., 1950, 1951 and 1952.

In the course of the inquiry, Ashok Motors Ltd., stated that they have been in negotiations with Daimler Benz of West Germany for some time and that the latter have agreed to participate in the manufacture of their passenger cars, trucks, buses, unimog vehicles, stationary engines, etc. They are also willing to subscribe a substantial amount to the shares of Ashok Motors Ltd. They have further no objection if Ashok Motors Ltd., enter into an agreement with Austin Motors Ltd., for the manufacture of Austin A7 passenger cars. Daimler Benz are well known on the continent of Europe and their products enjoy a high reputation. The proposal made by Ashok Motors Ltd., therefore, merits consideration especially as it includes the manufacture of diesel trucks. In view, however, of the small volume available for 3 ton trucks, we would not at this stage countenance any proposal for manufacturing 3 ton diesel trucks. 5 ton trucks have, however, almost exclusively diesel engines; and we think that, if a properly phased programme of four to five years for the manufacture of 5 ton trucks with diesel engines by Ashok Motors Ltd., in collaboration with Daimler Benz is submitted, it should be considered by Government. Ashok Motors Ltd., should, however, furnish details regarding the cost of manufacture of these vehicles. It is important to know whether in view of the small volume, the cost of manufacture of these vehicles would be reasonable. It should also be made clear to Ashok Motors Ltd., that, in case their proposal to manufacture 5 ton diesel trucks was approved, they would not be allowed to manufacture diesel cars or 3 ton diesel trucks or unimog jeeps and, that they would have to abandon the programme of manufacturing Austin and Leyland trucks. The question of allowing them to manufacture 3 ton diesel trucks could be considered after their performance with regard to the manufacture of 5 ton diesel trucks had been seen and the progress made by Hindustan Motors Ltd., Premier Automobiles Ltd., and Automobile Products of India Ltd., had been observed and sufficient material was available in regard to the growth of the volume of demand for this type of vehicle and their costs of production. When the programme of manufacture of Austin A7 passenger cars and Daimler Benz 5 ton trucks is submitted by Ashok Motors Ltd., and it is decided to approve their programme, the question as to what allocation of foreign

exchange should be allowed to them during the period of the programme will have to be decided by Government. If, however, it is decided not to approve the manufacturing programme of Austin A7 cars and Daimler Benz 5 ton trucks, Ashok Motors Ltd., will have to be treated like other assemblers in the matter of imports, except in regard to the manufacture of commercial vehicles.

(viii) In the absence of external competition, it is very essential that there should be internal competition and we must, therefore, ensure that any Import arrangements scheme which is intended to give protection provides for and progress of manu- such competition. In addition to competition there should facturing programmes. be a range of models from which a choice could be made by a purchaser. We have proposed five models for passenger cars, viz., Hindustan 14, Hillman Minx, Standard Vanguard, Dodge and Studebaker and five for commercial vehicles, viz., Dodge, Studebaker, Commer, Austin and Leyland, besides specialised vehicles like Jeep and Land Rover. These are exclusive of models for baby cars and 5 ton trucks. Having regard to the backwardness of motor transport and the necessity of establishing the automobile industry in India in the existing conditions, it cannot be said that the choice for purchasers of new motor vehicles is very much fettered. In the early stages of development of the automobile industry, some restrictions on the freedom to purchase motor vehicles is inevitable and has been willingly accepted by the people in other countries in similar conditions. Hindustan Motors Ltd., and Premier Automobiles Ltd., have stressed that, if necessary protection is given to them, they would be able to manufacture a very large proportion of the components and parts within three years. This may not, however, be possible for the other manufacturing firms. The programme should, therefore, be such as could be implemented by the firms which have so far been backward. We think that, if a programme for three years is laid down with the object of manufacturing a reasonable proportion of components and parts, it would be possible to provide necessary competition which would help to keep down prices and to maintain high standards.

We think that the following scheme will achieve the object in view by giving necessary stimulus to the manufacturers to implement a three years programme of manufacture. We, therefore, recommend that foreign Light and medium cars. exchange should be allocated to the manufacturing firms in the following manner:-

July 1953 to	: C.i.f. value of the number of units proposed in
December 1953.	: sub-paragraphs (iii), (iv) and (v) above on the
	: basis of 100 per cent of c.i.f. price of the
	: pack in 1952.
1954	: C.i.f. value of the number of units proposed in
	: sub-paragraphs (iii), (iv) and (v) above on the
	: basis of 85 per cent of c.i.f. price of pack
	: in 1952.

- 1955 : C.i.f. value of the number of units proposed in
: sub-paragraphs (iii), (iv) and (v) above on the
: basis of 70 per cent of c.i.f. price of pack
: in 1952.
- 1956 : C.i.f. value of the number of units proposed in
: sub-paragraphs (iii), (iv) and (v) above on the
: basis of 50 per cent of c.i.f. price of pack
: in 1952.

We have taken 1952 as the basic year for determining the c.i.f. price of a unit since we think that it represents the normal trend of automobile prices. Besides, we believe that information regarding the c.i.f. prices in 1952 has already been supplied to Government by the manufacturing firms.

In order to remove the disparity between the number of units proposed for Hindustan Motors Ltd., and the other manufacturing firms in respect of the light and medium types of cars and to give the latter a stimulus for manufacture, we think that it is necessary that additional foreign exchange should be given to them so that at the end of a period of three and half years, they would be able to compete on equal terms with Hindustan Motors Ltd. We, therefore, recommend that Automobile Products of India Ltd., and Standard Motor Products of India Ltd., should be given additional foreign exchange for 1955, for 750 vehicles each on the basis of 70 per cent of the c.i.f. price of pack in 1952 provided they have fulfilled their programmes of manufacture of approved components in 1954. Likewise, on similar performance during 1955, they should be given foreign exchange for 1956, for 750 more vehicles, that is, 1,500 more vehicles each on the basis of 50 per cent of the c.i.f. price. Similarly they should be given foreign exchange for 1957, for 1,000 more vehicles, that is, 2,500 more vehicles each on the basis of 50 per cent or such lower proportion of the c.i.f. price of pack in 1952 as may be fixed by Government after reviewing the position finally in 1956. The reason for giving additional foreign exchange is to encourage them to increase their production with a view to reducing costs. Foreign exchange equivalent to the progressively reduced c.i.f. price for 750 vehicles for each of the first two years and 1,000 vehicles for the third year has been proposed because Hindustan Motors Ltd., have been given an advantage over other manufacturing firms of nearly 2,500 vehicles (1,500 being the average annual sales of Hindustan Motors Ltd., during the last three years).

As regards big cars, foreign exchange should be allocated to Hindustan Motors Ltd., and Premier Automobiles Ltd., on the same basis as mentioned above.

Big cars.

As regards commercial vehicles, foreign exchange should be allocated to Hindustan Motors Ltd., Premier Automobiles Ltd., Automobile Products of India Ltd., and Ashok Motors Ltd., on the same principle as in the case of passenger cars. So far as the army demand is concerned, it should be divided equally between Hindustan Motors Ltd., and Premier Automobiles Ltd., and additional foreign exchange allocated to them in the same manner as in the case of commercial vehicles required for civilian use.

In order to enable Automobile Products of India Ltd., and Ashok Motors Ltd., to attain equality with Hindustan Motors Ltd., and Premier Automobiles Ltd., in the matter of production of commercial vehicles, we recommend that foreign exchange for 450 units each on the basis of 70 per cent of the c.i.f. price of pack in 1952 should be made available to them for 1955, provided they have fulfilled their programmes of manufacture of approved components in 1954. Likewise, on similar performance, additional foreign exchange should be allocated to them for 1956, for 450 more units, that is, 900 more units each on the basis of 50 per cent of the c.i.f. price. Similarly, they should be given foreign exchange for 1957, for 600 more units, that is, 1,500 more units each on the basis of 50 per cent or such smaller percentage of c.i.f. price of pack in 1952 as may be fixed by Government after reviewing the position finally in 1956. If at any time during the period of the scheme, Government are satisfied that the demand has increased, additional foreign exchange may be allowed to the manufacturing firms equally to meet the anticipated increase in the demand. If, however, any of the manufacturing firms fail to manufacture approved components by reduction of the required percentage of the c.i.f. price, no additional foreign exchange should be given. On the other hand, foreign exchange should be reduced by further 25 per cent for default in the preceding year. The foreign exchange thus released should be allocated equally to the manufacturing firms which have fully implemented their manufacturing programmes. In order to ensure that major components are manufactured so as to facilitate reduction in foreign exchange, the manufacturing firms should be required to submit for the approval of Government a list of components out of the list given in Appendix V, which they would undertake to manufacture in each year before licences are issued to them.

So far as pure assemblers are concerned, foreign exchange should be allocated to them for the period July 1953 to June 1954 on the basis of 25 per cent of their average annual sales of light, medium and big cars and commercial vehicles of van, light truck and medium truck and bus types during the last three years, namely, 1950, 1951 and 1952. The allocation of foreign exchange for the period July 1954 to June 1955 should be made on the basis of 12½ per cent of their average annual sales during the same period of three years. Thereafter, foreign exchange should be made available to

them for subsequent periods on the basis of $6\frac{1}{4}$ per cent of average annual sales of light and medium cars and commercial vehicles of van, light truck and medium truck and bus types and $12\frac{1}{2}$ per cent of their average annual sales of big cars during the last three years, i.e., 1950, 1951 and 1952. Progressive reduction of foreign exchange should not, however, be made in the case of Mahindra and Mahindra Ltd., and Dewar's Garage and Engineering Works, who have been assembling special types of vehicles, viz., jeep cars and jeep and land rover vans unless the manufacture of these vehicles is developed by a manufacturing firm along with the manufacture of passenger cars.

The question as to whether allocation of foreign exchange to the assemblers of commercial vehicles of 5 ton and above should be continued on the same basis or it should be reduced and in what manner would have to be decided if the proposal of Ashok Motors Ltd., to manufacture 5 ton diesel trucks in collaboration with Daimler Benz is approved by Government.

The allocation of foreign exchange proposed by us above for manufacturers and assemblers should be treated as inclusive of the value of licences not utilised in January-June, 1953 and carried over as valid for July-December, 1953.

The scheme outlined above and set out in a summary form in Appendix XI has been proposed as we believe that in the existing conditions in India it will work better than any other scheme and help to attain the objectives in a regulated and progressive manner. It will enable a manufacturing firm which manufactures more major components than required to import more vehicles within the foreign exchange allocated to it. Its working will, however, have to be watched closely and reviewed at the end of each year and suitable adjustments made for changes in domestic demand, variations in the c.i.f. price of the imported pack as compared to the base price in 1952, etc. If the working is satisfactory, the position will have to be reviewed finally at the end of 1956 and it may then be decided as to whether manufacture of more components should be undertaken and, if so, whether the scheme should be continued for a further period with necessary modification. If, however, the scheme does not work satisfactorily, suitable adjustments will have to be made so as to achieve the objectives without any dislocation of motor transport.

(ix) It has been impressed upon us by the manufacturing firms that the import of built up cars by passengers coming from abroad is seriously affecting the volume of demand. The number of cars imported in this way during the last three years, 1950, 1951 and 1952, is as under:-

Import of	the volume of demand.
builtup cars.	during the last three years, 1950, 1951 and 1952, is as under:-

Port	1950	1951	1952
Bombay	79	180	93 (up to September)
Calcutta	692	864	695 (up to October)
Madras	161	283	217 (up to September)
Total for India	<u>932</u>	<u>1,327</u>	<u>1,005</u>

In view of the low volume of demand, the number of such cars imported into the country cannot be regarded as negligible. If this number is reduced even by one-half, it might help to increase the volume of demand to some extent. It is, therefore, desirable that the import of such cars should be discouraged as much as possible. The standard rate of customs duty on cars imported completely assembled has recently been raised to 75 per cent. We, however, consider that this may not prove a sufficient deterrent. In order to make the import of built up cars by passengers coming from abroad more stringent, we recommend that a person importing such a car should have owned and used the car abroad for a period of at least one year. We understand that a similar condition exists for issuing an import licence for a car in U.K. The existing condition regarding resale of cars after import into India should be maintained.

15. (i) As regards the question of integration, mutual assistance and co-operation of manufacturers, assemblers and ancillary industries, the evidence before us showed that the scope for and extent of integration, mutual assistance and co-operation between manufacturers, assemblers and ancillary industries has so far been very limited. Competition among the manufacturers and assemblers and the uncertainty about the future policy of Government regarding the automobile industry have probably prevented formulation and implementation of any scheme for co-operation between the manufacturers, assemblers and ancillary industries. We think that when the situation in regard to the future becomes clear and every one knows his role definitely, there may be a fair prospect that efforts would be made by all interests to work in collaboration for the development of the automobile industry. We would particularly mention two directions in which the possibility of such collaboration may be explored. Firstly, the manufacturing firms, especially those who have not yet made any appreciable progress in implementing their programmes of manufacture, should try to utilise as far as possible any surplus capacity available with the other manufacturing firms. Secondly, the manufacturing firms may endeavour to utilise as far as possible any capacity or equipment rendered surplus by the curtailment of the operation of the assembling firms.

(ii) With reduction of types and models, the volume for replacement parts will increase, and it will be in the interests of the manufacturers of motor vehicles to encourage existing or prospective manufacturers of parts, etc. by supplying them necessary drawings and specifications. Co-operation between the manufacturers of motor vehicles and ancillary parts is essential for the development of the industry, and it is in mutual interest that the manufacturers of motor vehicles should purchase from the manufacturers of ancillary parts, the parts produced by them as original equipment, except the major components manufactured by themselves. The manufacturers of parts should also co-operate with the manufacturers of automobiles by offering the parts manufactured by them for use as original equipment at special rates. Mutual appreciation of difficulties and readiness to co-operate will go a long way to accelerate the development of the ancillary industries as well as the industry for manufacturing automobiles.

(iii) We may also point out that co-operation and mutual assistance will be necessary in regard to a situation which may arise in the near future. We anticipate that the implementation of our recommendations in paragraph 15 above may cause some disturbance of employment as jobs may be lost by many workers and technicians who are at present employed in the assembly plants. The position is likely to be aggravated at Bombay but we hope that the manufacturing firms at Bombay whose production will increase will be able to absorb as many of the retrenched workers and technicians as possible. If all the manufacturing firms co-operate, it may be possible to provide employment for a majority of the retrenched persons provided they would be willing to go to places where work could be found for them. This problem may further be simplified if the assembly plants could be utilised for starting ancillary industries.

17.(i) The main raw materials required for the automobile industry cover a wide range of ferrous and non-ferrous materials, rubber parts, glass, timber, **Raw materials.** plastics and paints. The present position in respect of their availability from indigenous sources is briefly as follows:-

(a) *Iron and Steel castings:*

Grey iron castings of ordinary quality and malleable steel castings are available but high quality grey iron castings for cylinders are still under development. Steel castings are available but their quality is not yet satisfactory.

(b) *Forgings:*

Small and medium drop forgings are available but the capacity for big drop forgings is being developed.

(c) *Steel:*

While mild steel and rolled sections and round bars of mild steel are available and alloy steel is also being obtained by making special arrangements with the steel companies and electric furnace owners, no satisfactory arrangements exist for rolled sections and round bars of alloy steel. Bright bars cold drawn, round, flat and hexagonal, free cutting steel, cold rolled steel strips and cold rolled thin sheet steel with deep drawing quality are not available. Hot rolled sheet steel medium thickness and quality and high silicon sheet steel for electric machines are, however, available.

Welded steel tubes are available but for high quality tubes, strips have to be imported. Thin seamless steel tubes are not available. Trench plates required for the production of fuel tanks are also not available.

(d) *Non-ferrous materials:*

Aluminium castings are available as die or pressure die castings and zinc die castings are also available. Thin rolled sheets and thin seamless tubes of brass and copper are, however, not available.

(e) *Rubber parts:*

Tyres and tubes, fan belts, foam rubber, steel backed rubber mountings and general rubber parts of water resistant quality are available. Oil and fuel resistant rubber and rubber brake hoses, however, are not available.

(f) *Plate glass, toughened or laminated safety glass:*

These are not available.

(g) *Paints:*

These are available.

(h) *Ball and roller bearings:*

Ball bearings are available but roller and taper roller bearings are not available.

(i) *Other materials:*

Timber, textile fabrics, upholstery materials and artificial resin are available. Bolts, screws, nuts, washers, spring washers and keys of ordinary quality, but not of high quality, are available.

(ii) We consider that the position in respect of some of the raw materials particularly alloy steel, cold rolled sheet steel and high quality castings is not satisfactory. As a result of research in the production and use of alloys, it may be possible to make several changes in the specification of materials for components. In the meantime, however, it would be necessary to continue the import of cold rolled sheets, steel sheets, steel strips, copper plates, copper

pipes, copper and brass strips, safety glass, cables and wires. Necessary assistance should be given to the manufacturers of automobiles and ancillary parts to import them from countries where they may be available. Certain alloy steels can be produced in the electric furnaces at Bombay and Calcutta. Volume again constitutes the main difficulty as the prices will be high. It is desirable to develop the raw material in India and we, therefore, recommend that in the steel expansion schemes which Government are sponsoring provision should be made for production of alloy steels required by the automobile industry.

(iii) Some of the automobile firms as well as component manufacturers have represented to us that the import duties on the raw materials imported by them should be reduced or refunded. We have carefully considered this request. Some of the raw materials required by the industry are enjoying protection and a reduction in the import duties on such materials is, therefore, not possible. Besides this difficulty, most of the raw materials used by the automobile industry are also used by other industries and any general reduction of duty would cause unwarranted loss of revenue. Partial or complete refund of duty can, however, be considered wherever its desirability and practicability can be established after necessary examination. We, therefore, suggest that the main industry and the ancillary industries should represent to Government specific cases for relief or assistance required in regard to the import duty on raw materials.

18. (i) Requests have been made by Hindustan Motors Ltd., for assistance in certain matters. They are endeavouring to build up an export trade and under the Sea Customs Act they are claiming drawback of the duty paid by them on import of c.k.d. components in respect of motor vehicles exported to Burma and Ceylon. But it appears that the customs authorities are insisting on the production of particular invoices in respect of components of the vehicles exported. It would not be feasible to produce these invoices and we, therefore, think that it should be sufficient if the customs authorities checked the *pro forma* accounts of Hindustan Motors Ltd., and ascertained the amount of duty paid by them on imported components. It should not be difficult to find out the duty paid by evolving some working arrangement. We recommend that such an arrangement should be evolved by the Customs authorities in consultation with Hindustan Motors Ltd. Hindustan Motors Ltd., have asked for refund of the whole duty. But as the total amount of duty paid by them will be gradually reduced, we do not think it is necessary to amend Section 42 of the Sea Customs Act which provides for drawback equal to seven-eighths of the duty paid. It is desirable that an export market should be developed in Burma and Ceylon and the procedure in regard to drawback should not be allowed to operate as a handicap to the export trade.

(ii) State Governments who have nationalised road transport are not generally purchasing motor vehicles required by them from the manufacturers. It is essential that State Road Transport Departments or Corporations should encourage manufacturers of motor vehicles in India by purchasing their vehicles provided they are of the type required by them. Only when the manufacturers are unable to produce vehicles of the type required by them, they should be given licences to import such vehicles from abroad.

(iii) High railway freight places the manufacturers at a disadvantage by raising the price of the motor vehicle to the consumer. The prices are already high and if this extra cost is added, it is likely to retard sales and in turn the development of manufacture. We, therefore, recommend that a special rate not exceeding one-half of the present rate should be fixed for the transport of new motor vehicles produced by the recognised manufacturers in India to the places where they are sold.

(iv) Another difficulty is experienced with regard to transport of motor vehicles. Owing to shortage of covered wagons, motor vehicles are being despatched in open trucks. Pilferage occurs frequently in respect of such consignments and Hindustan Motors Ltd., have to supply escort of armed guards for these vehicles. This is a heavy and unnecessary expenditure which adds to the price of the vehicles. We recommend that steps should be taken to increase the number of covered wagons so as to meet the full requirements of all the automobile manufacturers.

(v) Hindustan Motors Ltd., are experiencing difficulty in importing tools, machinery, plant and equipment and sample vehicles for development purposes, because Government are reluctant to issue general licences and are asking for minute details which in the present circumstances it is not possible to supply without considerable lapse of time. Hindustan Motors Ltd., are prepared to report to Government every purchase made against an *ad hoc* licence for information at the time of placing orders and to submit a consolidated statement containing details of orders placed during the month. The proposal made by the Company is reasonable and as delay will retard the development of the industry, we recommend that licences may be issued expeditiously subject to necessary safeguards.

(vi) Hindustan Motors Ltd., have to pay a duty of 31½ per cent on import of tools which have to be amortised during the currency of the model. This duty is a great handicap and tends to increase the price of the vehicle. They have requested that duty on tools and raw materials should be refunded. We have dealt with the question of import duties on raw materials in paragraph 17 above. As regards tools, the request of Hindustan Motors Ltd., is reasonable and we recommend that each such case should be considered on its merits and the duty refunded if the tools are imported for manufacture of motor vehicles.

(vii) Hindustan Motors Ltd., are being called upon to pay interest on advance payments of 85 per cent of the invoice price of imported components for the Army trucks. Interest is to be charged on the ground that this is a loan and not part payment of the expenditure actually incurred. As the amounts involved are very large, the request made by the firm is reasonable and is stated to be in accordance with the practice prevalent in respect of such large orders. We recommend that, as the nature of these payments is on account basis they should not be treated as loans on which interest has to be paid by Hindustan Motors Ltd.

19. (i) Diesel engines have been in use in India in agricultural and other industries for some years. Their use for automobiles has been comparatively a recent development. State Road Transport Departments and Corporations have introduced motor vehicles with diesel engines mainly on the ground of economy. There is a divergence of opinion among manufacturers, assemblers and consumers as to whether diesel engines should be substituted for petrol engine in the case of commercial vehicles. Slowly, however, diesel engine is making its way and owners of old commercial vehicles are substituting diesel engines in place of their worn-out petrol engines.

The opposition of the manufacturers of motor vehicles in India to diesel vehicles is due to the fact that if diesel vehicles which have an advantage over petrol vehicles owing to the much lower taxation on diesel oil are allowed to be manufactured in India, the manufacturers of petrol vehicles would suffer greatly. The instance of the U.S.A. is cited in support of their contention that a petrol vehicle is better than a diesel vehicle. The reason why diesel vehicles have not been popular in the U.S.A. can, however, be explained by the fact that petrol is produced in the U.S.A., and is comparatively cheap.

(ii) In Europe diesel vehicles are definitely gaining popularity. In U.K. and Germany, a large proportion of buses and trucks are now run on diesel engines and the trend seems to be to replace petrol engines by diesel engines in the case of trucks. In Germany, even passenger cars are being run on diesel engines.

(iii) The representatives of State Road Transport Departments and Corporations who gave evidence before us have expressed the view that vehicles with diesel engines are more suitable for use as passenger vehicles in cities and for heavy transport of goods. According to them, they are cheaper than petrol engine vehicles.

In order to understand the part played by a petrol engine and a diesel engine in the performance of a motor vehicle, it is necessary to know how these two engines work.

In the case of a petrol engine, an air-fuel mixture prepared by the carburettor is sucked in by the down-going piston, and compressed by the up-going piston to $1/6 - 1/8$ of its volume and ignited by the electrical spark. The burning mixture drives down the piston. By the connecting rod this movement is transferred into revolutions of the crankshaft. This process is called the 'Otto Cycle' and the engine 'Otto' engine. The expression 'petrol engine' is not technically correct. An Otto engine may also run with motor spirit, kerosene and gas.

In the case of a diesel engine, the air is sucked in by the down-going piston and then compressed to $1/15 - 1/18$ of its volume. By this high compression the air becomes so hot that the fuel which is now injected under very high pressure starts to burn immediately. By the combustion the piston is driven down, thus generating power. This process is called the 'diesel cycle' and the engine 'compression ignition' or 'diesel' engine.

Owing to its higher compression ratio, the thermal efficiency of the diesel cycle is considerably higher than that of the Otto cycle. On an average, the thermal efficiency will be for an Otto engine 23 per cent, and for a diesel engine 34 per cent; that is, of the heat contained in fuel, 23 per cent or 34 per cent, respectively is converted into power by the Otto or diesel engine.

The calorific value per lb. is practically the same for petrol and diesel oil, but the specific gravity of diesel oil is higher than that of petrol by 16 per cent. As liquid fuel is sold by volume and not by weight, 16 per cent more thermal units are obtained with 1 gallon of diesel oil than with 1 gallon of petrol.

This larger amount of thermal units is converted in a diesel engine into power to a higher percentage. If the power which an Otto engine generates out of 1 gallon of petrol is taken at 100, the power which a diesel engine produces out of one gallon of diesel oil is approximately 155; that is, a gallon of diesel oil contains theoretically 55 per cent more mileage than a gallon of petrol.

In practice, this advantage is still more in favour of the diesel engine by virtue of the fact that, when throttling down the engine to smaller output, the decrease in the thermal efficiency is slower in the case of diesel engine than in the case of the Otto engine. Therefore, the fuel consumption of a diesel truck compared with an Otto truck of the same performance will range between 60 to 70 per cent. The fuel cost per ton mile payload would bear the same relation if the price for a gallon of petrol and diesel oil would be the same.

The normal price relation arises mainly from the production process. Diesel oil is simpler to produce than petrol. It is reflected in the world market

prices which are 20 per cent less for diesel oil than for petrol. The 35 per cent less fuel consumption together with the 20 per cent less fuel price reduces the fuel cost for a diesel ton-mile 50 per cent under world market conditions. As India has to import all the motor fuel, it follows that every ton-mile transported by diesel trucks instead of by petrol trucks saves for India 50 per cent foreign exchange.

In view of the lower duty on diesel oil, the price of diesel oil per gallon in Bombay is Rs. 1-3-4 as against the price of petrol of Rs. 2-10-6 per gallon. The average price of diesel oil after taking into consideration the prices of diesel oil and petrol prevailing in the ports of Bombay, Calcutta and Madras, comes to Rs. 1-5-0 per gallon as against Rs. 2-11-2 of petrol. That means the price of diesel oil is 49 per cent of the price of petrol. From this and the consumption relation it follows that diesel drive saves the operator 68 per cent of the fuel cost.

The initial cost of a diesel vehicle is, however, higher than that of a petrol vehicle with the same performance by about 10-15 per cent. As regards the maintenance cost, a general overhaul is required in the case of an Otto engine after about 40,000 miles whereas in the case of a diesel engine a general overhaul would be necessary after about 120,000 miles. The cost of overhaul of a diesel engine will be 1.5 to 2 times higher than that of an Otto engine. The maintenance cost of one mile of operation of a diesel engine will, therefore, be one-half to two-third of that of an Otto engine.

An exact cost balance could only be made if all data for two comparable vehicles, one with a diesel engine and the other with an Otto engine, could be at hand. A simplified balance could, however, be made taking into consideration only the higher initial cost and the lower fuel consumption of the diesel vehicle. An Otto truck may cost Rs. 20,000. Its petrol consumption may be 9 miles per gallon. A diesel truck with the same performance may cost Rs. 22,000 and its fuel consumption may be 14 miles per gallon. The higher initial cost of the diesel vehicle is offset by the saving in fuel cost if the price for petrol and diesel oil would be the same; that is, Rs. 2-11-0 per gallon after 23,000 miles. In an exact balance the time factor would be important due to the interest to be paid and due to the depreciation rates on the higher initial cost. It is thus clear that the diesel's economical supremacy starts from a certain minimum mileage per year. Unless this mileage is reached, an Otto vehicle is more economical.

There are also other features which should be considered in comparing an Otto engine with a diesel engine. The life of a diesel engine is considerably longer than that of an Otto engine. So far as servicing is concerned, Otto engines are relatively less sensitive to maladjustment and they only react by

lower output and higher fuel consumption. On the other hand, the servicing of diesel engines requires great care. The main thing that a driver has to do is to clean the various fuel filters carefully. A diesel engine is very sensitive to dust or dirt in the fuel line. The servicing of a diesel engine, therefore, depends on the availability of service stations properly equipped with all the facilities to adjust, repair and replace injection equipment. There is, however, less danger of fire in the case of a diesel engine than in the case of an Otto engine.

(iv) After weighing fully the evidence before us, we have come to the conclusion that for lighter vehicles, whether they are used for goods transport or for passenger service, a diesel engine does not seem to be more economical or more suitable than a petrol engine. The use of diesel engines for such vehicles should, therefore, be discouraged. As regards heavy commercial transport trucks and heavy passenger vehicles, it would be desirable to allow both petrol and diesel engines, but the choice should be left to the owner of the vehicle. If he prefers a diesel engine he can get a Perkins engine, which is being assembled at present and is proposed to be manufactured by Simpson & Co. Ltd., Madras, fitted into his vehicle. Steps need not be taken to manufacture 3 ton diesel vehicles at this stage. It would be desirable to watch first how the scheme of manufacture of commercial petrol vehicles progresses and whether it develops sufficient volume. As regards extra heavy commercial trucks and extra heavy passenger vehicles of 5 ton and above, it is definitely more advantageous to use diesel engines and if there is a possibility of manufacturing such diesel vehicles in India, it should be explored.

The above conclusions are supported by a statement (Appendix XII) supplied to us by the General Manager of the Bombay State Road Transport Corporation, regarding the performance of Dodge and Studebaker vehicles with petrol engines and Commer and Seddon vehicles with diesel engines.

20. (i) All the firms with a manufacturing programme are tied up with foreign manufacturers; and while this is necessary in the first few years of other development of the automobile manufacture, it is in the national matters. interest that they should become independent of their foreign associates within as short a period as possible. This would, however, require highly qualified and trained technical officers including designers who would prepare their own designs and build up their own models. Hindustan Motors Ltd., are taking the right step in establishing a designing section in their factory. This might obviate the expenditure of enormous sums for purchasing new tools, fixtures, jigs, etc., whenever changes are made periodically in the models by the manufacturers with whom they are associated. A Research Section is also necessary for each firm to conduct research in regard to its own problems of

manufacture. Further, the manufacturing firms should introduce schemes for the training of apprentices.

Maximum economy is essential in every scheme of expansion so that minimum expenditure is incurred on plant, machinery and equipment, as well as overheads. It will certainly be wasteful to invest large sums of money in purchasing the pressing machinery for manufacturing body panels until the volume of sales of passenger cars has increased very considerably.

(ii) Under the Industries (Development and Regulation) Act, 1951, it is competent for Government to set up a Development Council for a scheduled industry. We recommend that such a Council should be set up for the automobile industry as early as possible. We also recommend that an Association of Manufacturers of Motor Vehicles and Ancillary Parts should be formed for considering the common problems of the industry for securing co-operation among the members and for bringing their difficulties to the notice of Government.

This Association when formed should set up an Automobile Standards Committee for formulating standards for motor vehicle components. It would be useful if an opportunity is given to consumers to co-operate. Close co-operation with the Indian Standards Institution and the Indian Army which has an excellent organisation for testing vehicles would be necessary.

(iii) The need for research in the production and use of alloys of steel required for the automobile industry has already been pointed out by us. We suggest that such research should be conducted at the National Metallurgical Laboratory at Jamshedpur in collaboration with the manufacturing firms.

(iv) As the manufacturing programmes develop, it would be desirable to set up an institution where research can be conducted in automobile engineering. There is already a Department of Internal Combustion Engineering at the Indian Institute of Science at Bangalore. Instead of setting up a new institution, we recommend that this Department should be developed as a centre for automobile research.

(v) It would be a great encouragement to the manufacturing firms if motor vehicles required by the Central Government as well as by the State Governments are purchased from them, except in cases where special types of vehicles which are not included in the manufacturing programme of any of the firms are required. There will be a surplus capacity with the manufacturing firms until the market expands. We suggest that the possibility of the surplus capacity being utilised by the Departments of the Central as well as State Governments for meeting their requirements for articles like leaf springs, etc., should be investigated.

We further recommend that in the case of loans advanced by the Central Government as well as by the State Governments to their officers for purchase of motor cars, a condition should be laid down that a motor car manufactured in India must be purchased.

(vi) It is hardly necessary to emphasise the importance of a scientific system of costing. For the proper assessment of costs of production, we consider that it is very essential that manufacturers of motor vehicles should be required to initiate within one year and maintain a proper system of costing.

(vii) Whether a firm has implemented a programme of manufacture as laid down by Government or not can be ascertained by periodical inspection. An adequate machinery is required for this purpose and for watching and reporting on the progress of the industry and the quality of its products. This, in our opinion, can best be done by attaching to the Commission a special officer possessing high qualifications in automobile engineering and practical experience of work in a large automobile factory. The success of the scheme recommended by us would depend upon periodical and careful inspection of the factories of the manufacturing firms. The status of the officer should, therefore, be sufficiently high and he should be appointed for a period of three years in the first instance.

(viii) During the course of the inquiry, Mahindra & Mahindra Ltd., submitted to us a scheme for the manufacture of jeeps on the basis of a production of 5,000 per year. Willys Overland Motor Company of the U.S.A., who are well-known manufacturers of jeeps, are willing to collaborate with Mahindra & Mahindra Ltd., for producing jeeps in India according to a phased programme. A jeep is a sturdy motor vehicle suited for use in the countryside. But the market for jeeps is limited and the bulk of the demand comes from the Army. The present price of a jeep is such that there is little scope for expansion of the civilian market, and with a low volume of demand the cost of manufacture of a jeep is likely to be fairly high. We do not, therefore, think that it would be advisable to establish a separate unit for the manufacture of jeeps at present. It is, however, possible that if the production of a jeep could be combined with the production of a passenger vehicle, the cost of production would be less. Standard Motor Products of India Ltd., have a scheme for manufacturing jeeps. It would be advantageous if the manufacture of jeeps could be developed along with the manufacture of Standard Vanguard cars, and in that case there would be no justification for taking up the manufacture of jeeps separately.

(ix) A request was also made to us on behalf of the Auto-Riksha and Engineering Factory, Bombay, that protection and assistance should be given to them for manufacturing auto-rikshas. An auto-riksha is a three-wheeled vehicle which

is operated by an engine with one or two strokes. Import of auto-rikshas has been allowed since the last three or four years, and a few of these are to be seen plying in some of the towns in India. Owing to its low running cost, an auto-riksha supplies the need for cheap transport. There is no indigenous manufacture of any of the components at present, but the representatives of the firm have a scheme for manufacture of the engine and other parts provided protection is given to them. At this stage it does not seem necessary to go in for the manufacture of auto-rikshas, and we suggest that the present practice of issuing import licences for a small number of auto-rikshas every year according to the needs of the towns in which they are expected to ply may be continued.



CHAPTER IV - SPECIFIC ISSUES OF THE INQUIRY

21. (i) In the previous paragraphs we have dealt with the various aspects of the automobile industry which are relevant to our inquiry. They include issues in the present inquiry. generally the six points on which Government have specifically asked for our advice. It will be convenient if in this chapter we give briefly our answers to these points.

We have examined the present and proposed manufacturing programmes of Hindustan Motors Ltd., and Premier Automobiles Ltd., and we consider that so far as plant, tools, machinery, etc., are concerned, the two firms are well equipped. They also have got adequate arrangements for the 'know-how' and possess capacity to manufacture motor vehicles of the requisite standard and quality. In the case of Hindustan Motors Ltd., the installed capacity is much higher than is warranted by the present volume of demand. They have also made considerable investment in the purchase of specialised machinery most of which is likely to become useless when the present model of Hindustan 14 car becomes obsolete.

The important ancillary industries, for example, rubber components, piston rings, leaf springs, etc., appear to be well equipped and have well qualified technical personnel. Their products are also stated to be of good quality and standard. The main problem, however, is the volume of demand. The present demand is comparatively small, being about 18,000 to 20,000 units, and there are as many as 12 producers for catering to this demand. Similarly, for the replacement market for ancillary industries, the volume of demand is restricted owing to the existence of many types and models of motor vehicles. The demand for original equipment by producers is very small. In the case of ancillary industries also, the volume of demand is the crux of the problem. Lack of adequate data makes it difficult to anticipate the future trend of cost of production of automobile manufacturing firms and manufacturers of ancillary parts. It is, therefore, not possible for us at this stage to offer an opinion as to whether these firms would be able to produce motor vehicles at a price which would permit of expanding demand.

(ii) The existing capacity for production of motor vehicles is about 84,000. Not even 25 per cent. of this capacity is being utilised. A major part of the capacity is moreover used only for assembling motor vehicles. The views of manufacturers and assemblers regarding the economic manufacture of motor vehicles within the existing volume of demand are divergent. Their interests are also conflicting. Although some of the manufacturers and assemblers are co-operating

with each other and are willing to extend this co-operation, much cannot be expected in the way of mutual assistance or co-operation and integration so long as the present position continues. Once the situation in regard to the future becomes clear and every producer knows his place definitely in the new scheme of things, it is possible that efforts might be made in the above directions with a view to utilising the existing facilities for the development of the industry as a whole.

(iii) Ancillary industries must develop simultaneously with the development of the manufacture of automobiles. Three difficulties are at present experienced by the ancillary industries. They are: (i) low volume of demand, (ii) necessity for import of raw materials which are not produced in India, and (iii) lack of encouragement from producers of automobiles. The volume of demand which is already low is further restricted owing to the multiplicity of types and models. Certain raw materials, especially alloy steels, have to be imported from abroad at high prices. Sometimes they cannot be obtained at all. Lastly, ancillary industries are catering to the replacement market only. Producers are reluctant to use the components and parts produced by the manufacturers of ancillary parts for original equipment. All these factors tend to raise the prices of components and parts produced by ancillary industries. To encourage the development of ancillary industries it is firstly necessary to reduce the types and models of motor vehicles to the minimum. Secondly, it is necessary to provide facilities for production of raw materials in India which have to be imported from abroad; and till they can be produced in India, to give necessary assistance to procure them from countries where they are produced and to give relief by refund of customs duty. The manufacturers of motor vehicles must also extend their co-operation to the ancillary industries by purchasing their components and parts as original equipment. It is also essential that manufacturers of ancillary parts should be made aware that, if they find that they are unable to sell their products owing to competition from imported components and parts, they should apply for protection or assistance in the usual manner. Encouragement should also be given to foreign manufacturers of some of the specialised ancillary parts, for example, carburettors, electrical instruments, etc., if they are prepared to establish ancillary industries in India in association with Indian interests.

(iv) The manufacture of motor vehicles should be restricted only to the firms which have undertaken or will undertake to manufacture them in accordance with their phased programmes. It is not possible for manufacturers of motor vehicles to produce thousands of parts themselves. Generally speaking, an automobile manufacturer manufactures components worth about 40 per cent of the ex-works price of an automobile and buys the remaining components, parts and acces-

sories from ancillary industries. The programme of manufacture will have to be spread over a period of years and, in the meantime, components and parts not manufactured in India either by the manufacturers of motor vehicles or ancillary industries will have to be imported. The same will be the case with accessories and raw materials. In order to stimulate manufacture of motor vehicles, arrangements for allocation of foreign exchange for imports of motor vehicles should be so devised as to create an incentive for manufacturers of automobiles to fulfil their programmes of manufacture and at the same time to prevent any serious dislocation of road transport in the country.

(v) We consider that the existing high rates of customs duty have not served the purpose for which they were levied and that it is desirable to abolish the present classification and to levy a flat rate of duty on imports of components and parts for passenger cars as well as trucks and spare parts.

The data available at present is not sufficient to decide whether any subsidy would be required by the manufacturing firms so as to enable them to sell their motor vehicles at prices at which the present volume of demand will not shrink but will expand. We consider that, if internal competition is established, it may not be necessary to give subsidy. In any case, until adequate data is available, this question cannot be examined thoroughly.

(vi) We have gone into the question of petrol *versus* diesel engine carefully and our conclusion is that for lighter vehicles, that is, upto 3 ton, petrol engine is more suitable and economical than diesel engine. The use of diesel engine for such vehicles should, therefore, be discouraged. For vehicles of 3 to 5 ton diesel engine is preferable provided there is a minimum mileage every year. We do not, however, think that any scheme for manufacturing Diesel trucks of 3 to 5 ton engines should be sponsored at this stage. Perkins P6 Diesel engines are being assembled by Simpson & Co., Madras and owners of trucks who desire to use Diesel engine can do so by getting their vehicles fitted with Perkins engine. As regards trucks of 5 ton and over, Diesel engine is definitely more advantageous than petrol engine and, therefore, Diesel engine should be preferred to petrol engine for this type of vehicle. It would be desirable for Government to encourage the manufacture of Diesel trucks of 5 ton and above even though the volume of demand is comparatively very limited.

CHAPTER V - CONCLUSIONS AND RECOMMENDATIONS

22. Our conclusions and recommendations are summarised as under:-

Summary of conclusions and recommendations. (1) The total annual assembling capacity of all the 12 units which are manufacturing or assembling automobiles is 84,014 vehicles (passenger cars and commercial vehicles). Their total production of vehicles in 1951 and 1952 was 21,577 and 14,873, respectively. [Paragraph 6(c)]

(2) The average annual sales during the last four years of the 12 manufacturers/assemblers were 19,788 vehicles, consisting of 9,426 cars and 10,362 commercial vehicles. [Paragraph 6(c)]

(3) The manufacturing programme of Hindustan Motors Ltd., is comprehensive and substantial progress has been made by the firm towards the manufacture of major components. The capacity of the plant is, however, far in excess of the output for which market can be found within the country during the next two years or so. [Paragraph 7(1) (ix)]

(4) Premier Automobiles Ltd., have not so far made any significant progress in the manufacture of the major components, viz., engine, transmission and rear axle. They have, however, made substantial progress in the manufacture of typical ancillary parts such as propeller shafts, radiators, leaf springs, mufflers, etc. Their capacity even for these parts is not being fully utilised for their own vehicles. [Paragraph 7(2) (x)]

(5) Automobile Products of India Ltd., have not gone beyond the stage of assembly so far, although they have taken steps to implement their manufacturing programme. [Paragraph 7(3) (iii)]

(6) The manufacturing programme of Standard Motor Products of India Ltd., has barely made a start and it would be some time before they are able to show any appreciable progress. [Paragraph 7(4) (ix)]

(7) At present only a nucleus of ancillary industry exists in the country. [Paragraph 8(1) (b)]

(8) At the present stage of development of the automobile industry in India, positive measures are required to accelerate its establishment on a sound basis. Some risk is involved in stimulating the manufacture of automobiles by such measures but it should be faced in view of the encouragement hitherto given to

the industry by Government, the progress made so far by the firms with a manufacturing programme, the largest investment made by the public in these concerns and the national benefits accruing from the establishment of the automobile industry. [Paragraph 10(b)]

(9) The present demand for motor vehicles - passenger cars and commercial vehicles - is estimated at 18,000 to 20,000 vehicles. The demand may under favourable conditions increase to 25,000 vehicles and more within the next three years. [Paragraph 11(a) and 11(b)]

(10) Early action may be taken by Government to implement the recommendations made by the Motor Vehicle Taxation Inquiry Committee in regard to inadequate road development, bad condition of roads, heavy and varying rates of taxation on commercial motor vehicles levied by State Governments and restrictions on inter-State movements of commercial vehicles with a view to ensuring an enlarged and steadily expanding volume of demand for motor vehicles. [Paragraph 11(e)]

(11) There should be four types of passenger cars and four types of commercial vehicles for civilian requirements in India. [Paragraph 11(f)]

(12) From the point of view of production, it is essential that the army demand should be combined with the civilian demand. [Paragraph 11(g)]

(13) The automobile manufacturers should, as far as possible, purchase the products of ancillary industries in India for use as original equipment. [Paragraph 12(b)]

(14) Steps should be taken to prevent haphazard and unregulated growth of ancillary industries. The number of units to be set up and the total capacity of each industry should be correlated to the actual or potential demand for its products. [Paragraph 12(d)]

(15) Ancillary industries requiring protection or assistance should be asked to apply for it according to the usual procedure. [Paragraph 12(e)]

(16) Government should give encouragement for the establishment of ancillary industries for the manufacture of certain important components such as carburettors, clutches, etc., in technical collaboration with foreign firms. [Paragraph 12(g)]

(17) For reasons given in paragraph 13, grant of subsidy to the industry and an increase in the rates of customs duty on automobiles are not recommended. [Paragraph 13]

(18) The present customs classification of components under items 75(9), 75(10), 75(11) and 75(12) of the Indian Customs Tariff Schedule should be abolished and all components and parts should be assessed at a standard rate of 40 per cent *ad valorem* inclusive of surcharge. [Paragraph 14(c)]

(19) Import arrangements and allocation of foreign exchange for the various types of vehicles should be as set out in paragraph 15. Their working should, however, be watched closely and reviewed at the end of each year and suitable adjustments made for changes in domestic demand, variations in c.i.f. price, etc. The position should be reviewed finally at the end of 1956. [Paragraph 15(i) to (viii)]

(20) The import of built up cars by passengers coming from abroad should be discouraged as much as possible. A person importing such a car should have owned and used the car abroad for a period of at least one year. The existing condition regarding resale of cars after import into India should be maintained. [Paragraph 15(ix)]

(21) The scope for and extent of integration, mutual assistance and co-operation of manufacturers, assemblers and ancillary industries has so far been very limited. Efforts are, however, likely to be made by all the interests to work in collaboration for the development of the automobile industry when the situation in regard to the future becomes clear and everyone knows his role definitely. Possibility of such collaboration should particularly be explored in the direction firstly, of utilisation of surplus capacity available with the manufacturing firms by those firms who have not yet made any appreciable progress in implementing their programmes of manufacture and secondly, the utilisation of capacity or equipment rendered surplus by the curtailment of the operations of the assembling firms. [Paragraph 16(i)]

(22) In the steel expansion schemes which Government are sponsoring, provision should be made for production of alloy steels required by the automobile industry. [Paragraph 17(ii)]

(23) The automobile industry and the ancillary industries should represent to Government specific cases for relief or assistance required in regard to the import duty on raw materials. [Paragraph 17(iii)]

(24) As it is desirable to develop an export market for motor vehicles in Burma and Ceylon, a working arrangement in regard to drawback of import duty on components to be paid by Hindustan Motors Ltd., in respect of motor vehicles exported to these countries should be evolved. [Paragraph 18(i)]

(25) State Road Transport Departments or Corporations should encourage manufacturers of motor vehicles in India by purchasing the vehicles from them. They should be given import licences only when the indigenous manufacturers are unable to produce vehicles of the type required by them. [Paragraph 18(ii)]

(26) A special railway freight rate not exceeding one-half of the present rate should be fixed for the transport of new motor vehicles produced by the recognised manufacturers in India to the places where they are sold. [Paragraph 18(iii)]

(27) Steps should be taken to increase the number of covered wagons so as to meet the full requirements of all the automobile manufacturers. [Paragraph 18(iv)]

(28) Import licences for importing tools, machinery, plant and equipment and sample vehicles for development purposes should be issued expeditiously to the manufacturers of automobiles subject to the necessary safeguards. [Paragraph 18(v)]

(29) Applications for refund of import duty on tools required for the manufacture of automobiles should be considered sympathetically by Government. [Paragraph 18(vi)]

(30) As the advance payments being made by Government to Hindustan Motors Ltd., to the extent of 85 per cent of the invoice price of imported components for the army trucks are on account basis, they should not be treated as loans on which interest is payable by Hindustan Motors Ltd. [Paragraph 18(vii)]

(31) For lighter vehicles, whether they are used for goods transport or for passenger service, a diesel engine does not seem to be more economical or more suitable than petrol engine. The use of diesel engines for such vehicles should, therefore, be discouraged. As regards heavy commercial transport trucks and heavy passenger vehicles, it would be desirable to allow both petrol and diesel engines but the choice should be left to the owner of the vehicle. Steps need not, however, be taken to manufacture 3 ton diesel vehicles at this stage. For extra heavy commercial trucks and extra heavy passenger vehicles of 5 ton and above, it is definitely more advantageous to use diesel engines and if there is a possibility of manufacturing such diesel vehicles in India, it should be explored. [Paragraph 19(iv)]

(32) All firms with a manufacturing programme should become independent of their foreign associates within as short a period as possible. They should set up designing and research sections of their own and introduce schemes for the training of apprentices. [Paragraph 20(i)]

(33) A Development Council for the automobile industry should be set up as early as possible under the Industries (Development and Regulation) Act, 1951. [Paragraph 20(ii)]

(34) An Association of Manufacturers of Motor Vehicles and Ancillary Parts should be formed for considering the common problems of the industry, securing co-operation among the members and for bringing their difficulties to the notice of Government. The Association should set up an Automobile Standards Committee for formulating standards for motor vehicle components. [Paragraph 20(i)]

(35) Research in the production and use of alloys of steel required for the automobile industry should be conducted at the National Metallurgical Laboratory, Jamshedpur. [Paragraph 20(iii)]

(36) The Department of Internal Combustion Engineering at the Indian Institute of Science, Bangalore, should be developed as a centre for automobile research. [Paragraph 20(iv)]

(37) The Central and State Governments should investigate the possibility of utilising surplus capacity available with the automobile manufacturers in India for meeting Government requirements other than those for motor vehicles. [Paragraph 20(v)]

(38) In the case of loans advanced by the Central Government as well the State Governments to their officers for purchase of motor cars, a condition should be laid down that a motor car manufactured in India must be purchased. [Paragraph 20(v)]

(39) Manufacturers of motor vehicles should be required to initiate within one year and maintain a proper system of costing. [Paragraph 20(vi)]

(40) A special officer possessing high qualifications in automobile engineering and practical experience of work in a large automobile factory should be attached to the Tariff Commission for a period of three years to watch and report on the progress of the industry, the implementation of the manufacturing programme and the quality of the products of the industry. [Paragraph 20(vii)]

(41) It would not be advisable to establish a separate unit for the manufacture of jeeps at present. The possibility of combining the manufacture of jeeps with that of motor cars may, however, be explored. [Paragraph 20(viii)]

(42) The present practice of issuing import licences for a small number of auto-rikshas may be continued. [Paragraph 20(ix)]

23. We cannot conclude our report without expressing our thanks to all those who have assisted us in our inquiry. We desire to acknowledge our deep obligation to the manufacturers and assemblers of automobiles and the manufacturers of ancillary parts who readily furnished detailed and elaborate information in compliance with our requests and tendered evidence before us. We are grateful to the Association of Motor Manufacturers and Importers, the Indian Roads and Transport Development Association Ltd., Associations of Motor dealers and ancillary parts, the Society of Motor Manufacturers and Traders, U.K., fleet owners and consumers who submitted memoranda containing their views and supplemented them by giving oral evidence. We are also indebted to the Government of India, the State Governments, the Indian Embassies in foreign countries, and High Commissions in U.K., Canada and Australia, and the State and Municipal Road Transport Undertakings for supplying much valuable information to us. We wish to acknowledge in particular the assistance received by us from Mr. H.M. Patel, I.C.S., Secretary to the Government of India in the Ministry of Defence and Brigadier B.D. Kapur, Director of Weapons and Equipment, in clarifying the position in regard to the types of non-fighting motor vehicles required by the Army. We are deeply indebted to Mr. W.R. Vorwig, our Automobile Expert, for his guidance in technical matters and his advice in regard to the complicated problems of the automobile industry in India. His proficiency in automobile engineering, his extensive knowledge of the automobile industry in Western Germany, and his long association with it were of great help to us in our inquiry. Our thanks are due to Col. P.V. Subramanyam, Chief Superintendent, Technical Development Establishment, Vehicles, Ahmednagar, for the advice he gave us regarding the non-fighting vehicles used by the Army. Our thanks are also due to Mr. R.L. Kumar, Development Officer, Ministry of Commerce and Industry (Development Wing), Government of India, who placed his knowledge of various aspects of the automobile industry in India at our disposal and supplied much valuable information.

M.D. Bhat,	Chairman.
B.V. Narayanaswamy	Member.
B.N. Adarkar,	Member.
B.N. Das Gupta,	Member.

D.K. Malhotra, Secretary.

Bombay,
25th April, 1953.

APPENDIX I
(Vide paragraph 2)

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY

New Delhi, the 29th March, 1952.

RESOLUTION
(Tariffs)

No. 1-T/(5)/52.- In pursuance of section 11 of the Tariff Commission Act, 1951 (L of 1951), the Central Government hereby refers to the Tariff Commission for enquiry and report the question of the grant of protection (whether by the grant of subsidies or the levy of protective duties or in any other suitable form) for the encouragement of the automobile industry in India.

2. In conducting the enquiry, the Commission will be guided by the principles laid down in section 14 of the said Act.

3. Any person, firm or company interested in the industry or in any industry dependent on the use of motor vehicles, who desires that his or its views should be considered by the Tariff Commission may make a representation in writing to the Commission which should be addressed to the Secretary to the Commission, Contractor Building, Nicol Road, Ballard Estate, Bombay - 1.

Sd./- K. N. KAUL,
Joint Secretary to the Government of India.

APPENDIX I - (Contd.)

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY*New Delhi, the 27th May, 1952.*

RESOLUTION

(Tariffs)

No.1-T/(5)/52.- In the Ministry of Commerce and Industry Resolution No.1-T(5)/52, dated the 29th March, 1952, published in the Gazette of India, dated the 29th March, 1952, the question of the grant of protection for the encouragement of the automobile industry in India was referred to the Tariff Commission for enquiry and report. The Government of India consider that it will be of assistance not only to the Commission but also to those interested in the industry if some of the more important points on which they would specially like the Commission to advise are indicated.

2. The Commission is accordingly requested to make thorough technical and such other examination as it may consider proper and to recommend measures necessary to protect, assist and facilitate the speedy growth of the automobile industry in India on a sound basis. In particular, ---

(1) To examine the manufacturing programmes (present and proposed) of Hindustan Motors and Premier Automobiles as well as of the industries engaged in the production of essential components for these units and report whether they are technically sound and their implementation would result in the manufacture of vehicles at a price which would permit of an expanding demand and if so, by what date;

(2) To examine and report on the possibilities of either integration or mutual assistance and co-operation of existing manufacturers/assemblers of motor vehicles with a view to utilising the total existing capacity to the best advantage and promote the development of the automobile industry as a whole;

(3) To examine and report on the steps necessary to encourage the growth of ancillary industries;

(5) To examine and report whether any change in the existing rates of import duty on components of motor vehicles is required and, if so, in what respect; or whether the grant of subsidy would be suitable and, if so, what conditions should be attached to it; or whether a combination of both these methods should be adopted;

The Commission in its enquiry will be assisted by one or two technical experts of high calibre.

Sd./- S
Joint Secretary,

सत्यमेव जयते

APPENDIX II
[Vide paragraph 3(a)]

List of firms/individuals and other bodies who were invited to send memoranda

* Indicates those who replied.

Indicates those who were not interested.

A. MANUFACTURERS/ ASSEMBLERS OF AUTOMOBILES:

- * 1. Automobile Products of India Ltd.,
Bhandup,
Bombay.
- * 2. Ashok Motors Ltd.,
Post Box No. 1825,
Madras.
- * 3. Addison & Co. Ltd.,
158, Mount Road,
Madras.
- * 4. Dewar's Garage & Engineering Works,
4, Council Street,
Calcutta.
- * 5. Ford Motor Company of India Ltd.,
Swadesh Mills Compound,
New Queen's Road,
Bombay.
- * 6. French Motor Car Co. Ltd.,
9-11, Hughes Road,
Bombay.
- * 7. General Motors India Ltd.,
Post Box No. 39,
Bombay.
- * 8. Hindustan Motors Ltd.,
8, Royal Exchange Place,
Calcutta.
- * 9. Mahindra & Mahindra Ltd.,
Gateway Building,
Apollo Bunder,
Fort, Bombay.
- * 10. Premier Automobiles Ltd.,
Agra Road, Kurla,
Bombay.
- * 11. Peninsular Motor Corporation Ltd.,
19, Convent Road,
Entally,
Calcutta.
- * 12. Standard Motor Products of India Ltd.,
29, Mount Road,
Madras.

B. MANUFACTURERS OF COMPONENTS/ACCESSORIES/MATERIALS:

1. Abbas Vazir,
New Bazar,
Bhadoi.
- * 2. Addison & Co. Ltd.
Mount Road,
Madras.
3. Aero Rubber Works Ltd.,
Kottayam.
- * 4. Addison's Paints and Chemicals Ltd.,
Huzur Gardens,
Semblam,
Madras.
- * 5. Ahmedabad Star Engineering Works Ltd.,
1730, Haribhai Dehla,
Outside Prem Gate,
Ahmedabad 2.
6. All India Spring Manufacturing Co.,
135, Netaji Subhas Road,
Calcutta.
- # 7. Aluminium Industries Ltd.,
Kundara (S. Fly),
S. India.
- * 8. Aluminium Manufacturing Co. Ltd.,
31, Chittaranjan Avenue,
Calcutta 12.
- * 9. Amco Ltd.,
Meher Building,
Chowpatty,
Bombay.
10. Amritsar Cotton Wadding Mills Ltd.,
Batala Road,
Hind Market,
Amritsar.
11. Associated Batteries Makers Ltd.,
4, Lyons Range,
Calcutta.
- * 12. Associated Industries,
Gogo Road,
Bhavnagar.
13. Associated Rubber and Plastics Works,
55, Bentinck Street,
Calcutta.
- * 14. Auto Accessories Ltd.,
Chowpatty Chambers,
Sandhurst Bridge,
Bombay.

15. Beharee Lal Ratten,
Chand Momoorganj
(Benaras).
16. Belgaum Motors,
Belgaum.
17. Bhadoi Textile Industries Ltd.,
Bhadoi.
18. Bharat Battery Manufacturing Co.,
P 1-A, Rashbehary Avenue,
Calcutta 19.
19. Bharat Spring Works,
78/80, C.P. Tank Road,
Bombay.
20. Ad Bhawani Mills Co.,
Old Market (Queen's Statue),
Amritsar.
21. Bhor Industries Ltd.,
Sir Vithaldas Chambers,
16, Apollo Street,
Fort, Bombay.
22. Birla Jute Mfg. Co. Ltd.,
C/o M/s. Birla Bros. Ltd.,
8, Royal Exchange Place,
Calcutta.
23. Bombay Dyeing and Mfg. Co. Ltd.,
"Neville House",
Nicol Road,
Ballard Estate,
Bombay.
24. Bombay Uniform Clothing Co.,
15, Borbhat Lane,
Bombay.
25. British Paints (India) Ltd.,
32, Chowringhee Road,
Calcutta 16.
26. Calcutta Electrical Mfg. Co.,
33, Netaji Subhas Road,
Calcutta.
27. Calcutta Spring Works,
1, Kharwar Gully,
Khumberwada, 6th Lane,
Bombay.
28. Canara Workshops Ltd.,
Mangalore 3,
S. Kanara Dt.,
S. India.

- * 29. Caltex (India) Ltd.;
Caltex House,
8, Ballard Road,
Ballard Estate,
Bombay.
- * 30. P.C. Chanda & Co. Ltd.,
72, Mission Row Extension,
Calcutta 1.
- * 31. Chavannes & Co. Ltd.,
Mercantile Chambers,
Ballard Estate,
Bombay.
- * 32. Chloride and Exide Batteries (Eastern) Ltd.;
4, Lyons Range,
Calcutta 1.
- * 33. Chrome Leather Co. Ltd.;
Chromepet P.O.,
Madras.
- 34. Cosmos India Rubber Works Ltd.;
P.B. No. 107,
Bombay 1.
- * 35. Cooper Allen Branch,
The British India Corporation Ltd.,
P.B. No. 6,
Kanpur, U.P.
- * 36. Dharampur Leather Cloth Co.;
Chandanwadi,
Sonapur Cross Street,
Bombay 2.
- * 37. Dunlop Rubber Co. (India) Ltd.,
57 B, Free School Street,
Calcutta 16.
- * 38. Eastern Accumulator Co.,
31, Mangoe Lane,
Calcutta.
- # 39. East Asiatic Co. (India) Ltd.,
1st Line Beach, Madras.
- # 40. East India Paint and Chemicals Works Ltd.,
103 A, Surendranath Banerjee Road,
Calcutta 14.
- # 41. Electrical and Allied Industries (Travancore) Ltd.,
Kundara (S.Rly).
- * 42. Electrical Storage Co. Ltd.,
112, Narkeldanga Main Road,
Calcutta 11.



- * 43. Elephant Oil Mills Ltd.;
Rustom Building,
Churchgate Street,
Bombay.
- 44. Empire Chemical Co.,
14 B, Coristan Road,
Calcutta.
- * 45. Estrela Batteries Ltd.,
Yusuf Building,
Churchgate Street,
Fort, Bombay.
- * 46. Firestone Tyre and Rubber Co. of India Ltd.,
Hay Bunder Road,
Sewree,
P.O. Box No. 197,
Bombay 1.
- * 47. Free India Dry Accumulators Ltd.,
2, Doyahatta Street,
Calcutta.
- * 48. Gemco Industries,
4th Khetwadi Lane, Bombay.
- * 49. General Manufacturing Co.,
104, Mazagon Road,
Bombay.
- * 50. General Motors (India) Ltd.,
Post Box No. 39, Bombay.
- * 51. Goodlass Wall Ltd.,
P.O. Box No. 699,
Bombay.
- * 52. Goodyear Tyre and Rubber Co., (India) Ltd.,
60, Chowringhee Road,
Calcutta 20.
- * 53. Gordon, Woodroffe Leather Mfg. Co. Ltd.,
Pallavaram P.O.,
Madras.
- * 54. Gourepore Co. Ltd.,
2, Fairlie Place, Calcutta.
- * 55. Greaves Cotton Crompton Parkinson Co. Ltd.,
1, Forbes Street, Fort, Bombay.
- 56. Gujrat Rubber Works Ltd.,
Goa Gate, Baroda.
- * 57. Shree Hanuman Jute Mills,
8, Dalhousie Square East, Calcutta.
- ~~58~~ 58. E. Hill & Co. Ltd.,
Mirzapore, U.P.

59. Himco (India) Ltd.;
Kondivita, Andheri,
Bombay.
60. Hindustan Industries and Machine Mfg. Co. Ltd.,
Konia, Kashi, C.Rly.
61. Hindusthan Rubber Works Ltd.,
14, Ballygunj Station Road,
Calcutta.
62. Hoare Miller & Co. Ltd.,
5, Fairlie Place, Calcutta.
63. Howrah Mills Co. Ltd.,
C/o Jardine Henderson Ltd.,
Managing Agents,
4, Clive Row, Calcutta 1.
64. Hoyle, Robson, Barnett & Co. Ltd.,
"Stephen House",
4, Dalhousie Square East, Calcutta.
65. Imperial Chemical Industries (India) Ltd.,
18, Strand Road,
Calcutta 1.
66. India Paint, Colour and Varnish Mfg. Co.,
14, Netaji Subhas Road,
Calcutta.
67. India Pistons Ltd.;
Huzur Gardens,
Sembiam, Madras.
68. India Tyre and Rubber Co. (India) Ltd.,
Spencer's Building,
Forjett Street,
Bombay.
69. India Rubber Manufacturers Ltd.,
11/12, Esplanade Mansions,
Calcutta.
70. India Battery Mfg. Co. Ltd.,
1-A, Lower Circular Road,
Calcutta.
71. Indian Cable Co.,
9, Hare Street,
Calcutta.
72. International Engineering Service,
G, Block,
Sassoon Dock, Colaba,
Bombay 5.
73. J.K. Cotton Mfrs. Ltd.,
Kamla Tower,
Kanpur.

74. J & R. Hutchison Ltd.,
10, Clive Row,
Calcutta.
75. R.B.S. Jain Rubber Mills Ltd.,
Jwala Prasad Lane,
Lilluah (Howrah),
Calcutta.
76. Jenson and Nicholson (India) Ltd.,
2, Fairlie Place,
Calcutta.
- # 77. John Fleming & Co. Ltd.,
Bastion Road, Fort,
Bombay 1.
- # 78. Kadar Rubber Manufacturing Co. Ltd.,
92, Narkeldanga Main Road,
Calcutta 11.
- # 79. Kailas Carpet Co.,
Dholpur House,
Agra.
80. Kohinoor Mills Co. Ltd.,
Naigaum Cross Road,
Dadar (Central Rly.).
81. Kohinoor Rubber Works,
46/6, Canal Post Road,
Calcutta.
- * 82. Korula Rubber Co. Ltd.,
249-A, Worli,
Bombay 18.
83. Lakshmiratan Engineering Works,
B.R.'s Mills Compound,
Ferguson Road, Lower Parel,
Bombay.
- * 84. Malleable Iron and Steel Castings Co. Ltd.,
Mathuradas Mills Compound,
Tulsipipe Road, Lower Parel,
Bombay.
85. T. Manicklal Mfg. Co.,
P.B. 111 A,
Bombay.
86. McFarlane & Co. Ltd.,
25, Netaji Subhas Road,
Calcutta.
87. Metal Press Works Ltd.,
3, Jagmohan Mullick Lane,
Calcutta 7.

Metropolitan Springs Ltd.,
Saltpan Road,
Antophil West,
Bombay.

Md. Ibrahim Fakir Md.,
Bhadoi.

Modak Rubber Products Ltd.,
Khed Galli East,
Gokhale Road South,
Bombay 28.

Modern Rubber Mfg. Co.,
17/19, Dalal Street,
Wadia Building,
Bombay, 1.

Motor Industries Co. Ltd.,
202/203, Mount Road,
Madras.

Murarka Paint and Varnish Works Ltd.,
1, E. Dalhousie Square,
Calcutta.

Mysore Electric-Chemical Works Ltd.,
191, IV Cross Road,
Gandhinagar,
Bangalore City.

Nagarath Oil Mills,
P.B. No. 241,
Kanpur.

Nanco Rubber and Plastics Ltd.,
A.T.T.Colony, Lawley Road,
Coimbatore,
S. India.

Napier Paint Works,
3, Matisil Street,
Calcutta.

National Insulated Cable Co.,
of India Ltd.,
"Stephen House",
1, Dalhousie Square East,
Calcutta 1.

National Bearing Co. Ltd.,
Jaipur,
Rajasthan State.

National Rubber Manufacturers Ltd.,
"Leslie House",
19, Chowringhee Road,
Calcutta.

101. National Tyre and Rubber Co.,
of India Ltd.,
Kottayam,
Travancore-Cochin State,
S. India.
102. New Era Textile Mills Ltd.,
Tulsipipe Road,
Bombay 16.
103. New Prahlad Mills Ltd.,
Ferguson Road,
Lower Parel,
Bombay.
- * 104. Nuddea Mills Co. Ltd.,
C/o McNeill and Berry Ltd.,
2, Fairlie Place,
Calcutta.
105. Obettee Ltd.,
Mirzapur,
U.P.
- * 106. Oldham & Son (India) Ltd.,
Saidapet,
Madras 13.
107. Olympia Rubber Works Ltd.,
10, Paymental Garden Road,
Calcutta.
108. Oriental Carpet Mfrs. (India) Ltd.,
Amritsar.
109. Plywood Manufacturing Co. Ltd.,
9, Wallace Street,
Bombay.
- * 110. Pinchin, Johnson & Associates Ltd.,
Lakshmi Buildings,
Sir P.M. Road,
Bombay.
- * 111. Pioneer Rubber Mills (Bombay) Ltd.,
Agra Road,
Bhandup,
Bombay.
- * 112. Pradip Lamp Works,
45, Armenian Street,
Calcutta 1.
- * 113. Praga Tools Corporation,
17, Saifabad,
Hyderabad (Dn.),
S. India.

- * 114. Prem & Co.,
3, East Park Road,
Shidipura,
Delhi 6.
- # 115. Presidency Jute Mills Co. Ltd.,
McLeod House,
Calcutta.
- 116. R.M. Engineering Works,
Kokhra,
Mehmedabad,
Ahmedabad.
- 117. Radio and Electrical Mfg. Co.,
Bangalore.
- * 118. Sri Ram Industrials,
Tudiyalur P.O.,
Coimbatore,
S. India.
- * 119. Rayala Corporation (Madras) Ltd.,
1/155, Mount Road,
Madras.
- * 120. Rubberex Industries Ltd.,
109, Love Lane,
Mazagaon,
Bombay.
- * 121. S.A. Engineering Works,
Petit Shah Compound,
Nana Chowk,
Bombay.
- * 122. Sahu Rubbers Ltd.,
15-A, Elphinstone Circle,
Fort, Bombay.
- * 123. Sanghani Momot Industries,
6, Bhatwadi Lane,
Bombay 4.
- * 124. Sanghavi & Co.,
Love Lane,
Mazagaon,
Bombay.
- 125. Seth Bros.,
373, Kalbadevi Road,
Bombay.
- * 126. Shalimar Paint and Varnish Mfg. Co.,
Calcutta.
- 127. Simplex Mills Ltd.,
Clerk Road,
Jacob Circle,
Bombay.

- * 128. Simpson & Co. Ltd.;
202/203, Mount Road,
Madras.
- * 129. C.M. Smith & Sons,
Khara Kuva,
Nadiad
(Bombay State).
- 130. Solar Paint and Varnish Mfg. Co.,
Belghuria (24 Parganas),
Calcutta.
- * 131. South Indian Dry Accumulators Ltd.;
4, McLean Street,
Georgetown,
Madras.
- * 132. Standard Batteries Ltd.,
43, Forbes Street,
Fort, Bombay.
- 133. Standard Vacuum Oil Co.;
"Neville House",
Nicol Road,
Ballard Estate,
Bombay.
- * 134. Subol & Sons, Ltd.;
13, Brabourne Road,
Calcutta.
- * 135. Suedes and Leatherettes Ltd.;
Hindustan Aircraft P.O.,
Bangalore.
- 136. Sun Colour and Paint Mfg. Works.,
Jamnagar
(Kathiawar).
- 137. Supreme Industries Ltd.;
Sewree Cross Road,
Wadala,
Bombay.
- 138. Suresh Engineering Works,
Kalachowkie Road,
Lalbaug,
Bombay 12.
- # 139. Tube Investment of India Ltd.;
31, Netaji Subhas Road,
Calcutta 1.
- 140. Tellory & Sons,
Bhadoi,
Banaras State.

- * 141. Travancore Rubber Works,
Trivandrum,
S. India.
- * 142. Union Co. (Accessories) Ltd.,
29, Mount Road,
Madras.
- * 143. United Trading Co.,
Kashmere Gate,
Delhi.
- 144. Vaco Manufacturing Co. Ltd.,
Kilphwa,
Meerut,
U.P.
- * 145. Wheel and Rim Co. of India Ltd.,
202, Mount Road,
Madras.
- * 146. Kirloskar Oil Engines Ltd.,
Elphinstone Road,
Kirkee, Poona 3.

C. ASSOCIATIONS :

- * 1. Association of Rubber Manufacturers in India,
37-A, Free School Street,
Calcutta.
- * 2. All India Manufacturers' Organisation,
Industrial Assurance Building,
Churchgate, Fort,
Bombay.
- * 3. Bombay Motor Merchants' Association Ltd.,
Sandhurst Building,
Near Sandhurst Bridge,
Bombay 4.
- * 4. Calcutta Motor Dealers' Association,
P-5, Mission Row Extension,
Calcutta 1.
- * 5. Electric Lamp Associations of India,
4, Lyons Range,
Calcutta.
- * 6. Indian Rubber Industries Association,
Rahimtoola House,
Homji Street,
Bombay.
- * 7. Madras Motor Parts Dealers' Association,
Mount Road,
Madras 2.
- * 8. Motor Vehicles and Allied Merchants' Association,
1/155, Mount Road,
Madras 2.
- 9. The All India Motor Unions Congress,
5192, Lahori Gate, Delhi.

APPENDIX III
[Vide paragraph 3 (c)]

List of factories/firms visited by the Chairman and Members of the Commission accompanied by the Secretary, Mr. W.R. Vorwig, Automobile Expert, Mr. P.L. Kumar and Cost Accounts Officers.

	Date of visit		
	By the Commission	By the Automobile Expert	By the Cost Accounts Officer
A. Automobile factories.			
1. Addison & Co. Ltd., Madras.	6- 1-1953	5-11-1952	
2. Ashok Motors Ltd., Madras.	5- 1-1953	5-11-1952	
3. Automobile Products of India Ltd., Bombay.	10-12-1953	27-10-1952	
4. Dewar's Garage & Engineering Works, Calcutta.	27-11-1952	16-10-1952	
5. Ford Motor Co. of India Ltd., Bombay.	9-12-1952	28-10-1952	6- 1-1953
6. French Motor Car Co. Ltd., Bombay.	11-12-1952	10-12-1952	
7. General Motors India Ltd., Bombay.	8-12-1952	7-10-1952	22- 1-1953
8. Hindustan Motors Ltd., Calcutta.	26-11-1952	13-10-1952	From 11th to 26th Nov., 1952
9. Mahindra & Mahindra Ltd., Bombay.	12-12-1952	8-10-1952	
10. Peninsular Motor Corporation Ltd., Calcutta.	27-11-1952	15-10-1952	
11. Premier Automobiles Ltd., Bombay.	19-11-1952	22- 9-1952	From 18th to 29th Nov., 1952 and from 1st to 12th Dec., 1952
12. Standard Motor Products of India Ltd., Madras.	5- 1-1953	6-11-1952	
B. Ancillary industries.			
(a) 1. Auto Accessories Ltd., Bombay.		28-10-1952	
2. Dunlop Tyre & Rubber Co. Ltd., Calcutta.	--	20-10-1952	
3. Firestone Tyre & Rubber Co. Ltd., Bombay.	--	10-10-1952	

Date of visit

	By the Commission	By the Automobile Expert	By the Cost Accounts Officer
4. Hoare Miller & Co. Ltd., Calcutta.	28-11-1952	20-10-1952	2-12-1952
5. India Pistons Ltd., Madras.	6- 1-1953	10-11-1952	12-12-1952
6. Kirloskar Oil Engines Ltd., Poona.	--	--	--
7. Metropolitan Springs Ltd., Bombay.	2- 1-1953	5-10-1952	3-12-1952
8. Motor Industries Ltd.	--	5-11-1952	
9. Rayala Corporation Ltd., Madras.	--	10-11-1952	
10. Simpson & Co. Ltd., Madras.	6- 1-1953	7-11-1952	
11. Union Co. (Accessories) Ltd., Madras.	--	6-11-1952	18-12-1952
12. Wheel & Rim Co. of India Ltd., Madras.	--	7-11-1952	
(b) 1. Gemco Industries, Bombay.	--	6-10-1952	
2. General Manufacturing Co. Ltd., Bombay.	--	10-10-1952	
3. S.A. Engineering Works Ltd., Bombay.	4- 2-1953	29-10-1952	
4. Lakshmiratan Engineering Works, Bombay.	2- 1-1953		
C. Other industries.			
1. Addison's Paints & Chemicals Ltd., Madras.	6- 1-1953	10-11-1952	
2. Aluminium Manufacturing Co. Ltd., Calcutta.	28-11-1952	21-10-1952	
3. Binny Engineering Works, Madras.	--	6-11-1952	
4. Jeewanlal (1929) Ltd., Madras.	--	6-11-1952	
5. Malleable Iron & Steel Casting Co., Bombay.	3- 1-1953	6-10-1952	
6. Tata Iron & Steel Co. Ltd., Jamshedpur.	--	17-10-1952	
D. Government Workshops.			
Madras State Transport Workshops, Madras.	--	12-11-1952	

APPENDIX IV
[Vide paragraph 3(e)]

(a) Tariff Commission's programme of inquiry

<i>Date</i>	<i>Interest represented</i>	
January, 1953.		
12th	Assemblers/Manufacturers, Component manufacturers, State Transport Services, Associations, Dealers and Individuals.	Public inquiry
13th	-do-	-do-
14th	-do-	-do-
15th	State Transport Services and Motor Vehicle Operators.	Discussions
16th	Manufacturers and Assemblers:	-do-
17th	Component manufacturers and Automobile manufacturers/assemblers.	-do-
19th	Automobile Products of India, Standard Motor Products and Ashok Motors.	-do-
20th	Hindustan Motors and Premier Automobiles.	-do-
21st	Assemblers only.	-do-
22nd	Ministry of Defence, Hindustan Motors, Premier Automobiles.	-do-
23rd	Premier Automobiles, Hindustan Motors.	-do-
27th	Automobile Manufacturers' Employees' Association.	-do-
28th	Indian Roads & Transport Development Association Ltd.	-do-
29th	Auto Riksha & Engineering Factory, Airflow Transport Ltd.	-do-
30th	Society of Motor Manufacturers and Traders, Ltd. (U.K.).	-do-
February, 1953.		
2nd	Col. Pratt, Representative of Austin Export Corporation.	-do-
3rd	Sanghani Momot Industries, Ltd.	-do-
7th	Mahindra and Mahindra Ltd.	-do-
9th	Premier Automobiles, Hindustan Motors.	-do-
11th	Hindustan Motors.	-do-
13th	Automobile Products of India.	-do-

(b) List of persons who attended the public inquiry on 12th, 13th and 14th January, 1953.

MANUFACTURERS/ASSEMBLERS:

1. Mr. L.P. Misra	}	representing	Hindustan Motors Ltd.;
2. " H. Keil			Calcutta.
3. " Lalchand Hirachand			
4. " Chinubhai Kilachand	}	"	Premier Automobiles Ltd.;
5. " V.M. Meswani			Bombay.
6. " A.R. Wadia			
7. " S. Satyamurti	}	"	Ashok Motors Ltd.,
8. " S.G. Sanghi			Madras.
9. " K. Gopalakrishnan			
10. " J.R. Mody	}	"	Standard Motor Products of India
11. " J.S. Gills			Ltd., Madras.
12. " N.J. Stork			
13. " W.M. Linton	}	"	Automobile Products of India
14. " W.M. McComb			Ltd., Bombay.
15. " G.W. Withell			
16. " G.E. Corey	}	"	General Motors India Ltd.,
17. " K.C. Mahindra			Bombay.
18. " H.C. Mahindra			
19. " Keshub Mahindra	}	"	Ford Motor Co. of India Ltd.,
20. " W. Pahner			Bombay.
21. " C.B. Saran			
22. " N. Kureishi	}	"	Mahindra and Mahindra Ltd.,
23. " J.M. Benzimra			Bombay.
24. " H.N. Nicholls			
25. " G.B. Dewar			



COMPONENT MANUFACTURERS:

26. Mr. S.L. Kirloskar	}	"	Kirloskar Oil Engines Ltd.,
27. " C.S. Kirloskar			Poona.
28. " V.A. Watts			
29. " Stanford	}	"	India Pistons Ltd.,
30. " L. Staples			Madras.
31. " P. Patel			
32. " H.R. Bhat	}	"	Simpson & Co., Madras.
33. " V.S. Kudva			
34. " V.L. Shah			
35. " J.P. Sheth	}	"	Malleable Iron & Steel Co.;
36. " J.M. Pote			Bombay.
			Canara Workshops Ltd.,
			Mangalore.
			Metropolitan Springs Ltd.,
			Bombay.
			Belgaum Motors,
			Belgaum.

37. Mr. C.M. Smith	representing	C.M. Smith & Sons, Nadiad.
38. " U.P. Sanghani	"	Sanghani Momot Industries, Bombay.
39. " A.G. Wozencroft	"	Lucas Indian Service Ltd., Bombay.
40. " D.J.F. McIntosh	}	Indian Cable Co. Ltd., Calcutta.
41. " A.R. Driessen		
42. " D.S. Kulkarni	}	Indian Rubber Industries Association.
43. " L.M. Jamnadas		
44. Dr. D. Banerjee	}	Association of Rubber Manu- facturers, Calcutta; and National Rubber Manufacturers, Calcutta.
45. Mr. C.A. Ayling		
46. " D.P. Antia	"	Aluminium Manufacturing Co. Ltd., Calcutta.
47. " A.N. Chinoy	"	Addison's Paints and Chemicals Ltd., Madras.
48. " N.S. Rege	"	Chavannes & Co. Ltd., Bombay.

STATE TRANSPORT AND FLEET OWNERS:

49. Maj.Gen. G.D. Young	}	Bombay State Road Transport Corporation, Bombay.
50. Maj. H. Walmsley		
51. Mr. G.G. Morarji	}	B.E.S.T. Undertaking, Bombay.
52. " J.P.L. Shenoy, I.C.S.		
53. " E.V. Sheshadri	"	Bangalore State Road Transport.
54. " B.K. Lall	"	Delhi Transport Service, New Delhi.
55. " Vizarat Ali Khan	"	Hyderabad State Road Transport.
56. " Kundan Lal	"	All India Motor Unions Congress, Delhi.

MANUFACTURERS/ TRADERS' & IMPORTERS
ASSOCIATION:

57. Mr. C.S. Pande	representing	Automobile Manufacturers' Association of India, Calcutta.
58. " C. Bonnor	}	Motor Manufacturers' and Importers' Association Ltd., Bombay.
59. Dr. J.M. Rane		
60. Mr. T.S. Santhanam	}	Motor Vehicles and Allied Merchants Association, Madras.
61. " S.N. Ramaswami		
62. " S. Dey	}	Calcutta Motor Dealers' Association, Calcutta.
63. " A.R. Mukherji		

64. Mr. P.S. Gupta	representing	Delhi Motor Traders' Association, Delhi.
65. " D.S. Kalyanpur	"	Bombay Motor Merchants' Association, Bombay.
66. Lt.Col. H.C. Aimable	}	Automobile Traders' Association, New Delhi.
67. Mr. Premnath		
68. " K.N. Menon		
69. " H.F. Higgins	"	British Ancillary Mfrs., U.K.

OFFICIALS:

70. Mr. H.M. Patel, I.C.S.	"	Ministry of Defence, Government of India.
71. " J.M. Lobo Prabhu, I.C.S.	"	Government of Madras.
72. " M.R. Mandlikar	"	Department of Industries, Bombay.
73. " M.S. Kharkar	"	Collector of Customs, Bombay.

OBSERVERS:

74. Mr. L.R. Elting	"	Dodge & Seymour (India) Ltd.; Bombay.
75. " G. Mascarenhas	}	Associated Corporation of Industries (India) Ltd., Bombay.
76. " A. Srinivasan		
77. " G.J. Husted	"	U.K. Trade Commissioner in Bombay.
78. " B.C. Mehta	"	Chandulal Mehta & Co. Ltd., Bombay.
79. " L. Pan	"	Scott & Pickstock Ltd., Calcutta.
80. Mrs. Pratt	"	Austin Export Corp.
81. Mr. H.P. Ralph	"	Ford Motor Co. of Canada Ltd.; Canada.
82. " Stephen Fekete, Jr.	"	Chrysler Export Corp.
83. " C.S. Nair	"	Indian Roads and Transport Development Association, Ltd., Bombay.
84. " S.H. Bhedwar	"	Metro Motors, Bombay.
85. " E.A. Smith	"	Walford Transport, Calcutta.
86. " A. Peten	"	"Motor Transport", Delhi.
87. " A.R. Denholm	"	Turner, Hoare & Co. Ltd., Bombay.
88. " A.F.L. Collins	"	Society of Motor Manufacturers and Traders Ltd., U.K.
89. Comdr. N.K. Nathan, I.N.		

TRADE UNIONS:

90. Mr. S.V. Sheshadri

representing

Automobile Manufacturers'
Employees' Association,
Bombay.

OTHERS:

91. Mr. B.C. Suvarna

"

Amzel Ltd., Bombay.

92. " K.V. Eswaran

"

Airflow Transport Ltd.,
Bangalore.

93. " N.K. Firodia }

"

Bachhraj Factories Ltd.,
Bombay.

94. " M.V. Narsi }

95. " P.M. Chautal

"

Automobile Sales Engineer
and Inventor.

96. " Chothia

"

W.I.A.A. Magazine, Bombay.

97. " K. Gidwaney

"

"Automobile News", Bombay.

98. " G.S. Sethi

"

"Auto Market & Motorist",
Bombay.

सत्यमेव जयते

APPENDIX V
[Vide paragraph 6(a)]

List of important and special components for automobiles

Components normally manufactured by automobile factories.	Components normally manufactured by ancillary factories.
--	---

1. ENGINE

Including: Cooling-, fuel-, intake and exhaust system.

Excluding: Electrical and rubber parts, fuel hoses, gaskets.

Cylinder block	Pistons
Cylinder head	Piston pins
Crank shaft	Piston pin bushings
Cam shaft	Piston pin retainer rings
Connecting rods	Piston rings
Connecting rod bolts	Cylinder liners
Flywheel	Crank shaft bearings (steel backed white metal or copper-lead)
Starter gear ring	Roller chain
Oil pan	Valves
Timing gears	Valve springs
Tappets	Valve seat inserts
Rocker shafts	Carburettor
Rocker levers	Injection pump
Valve guides	Injection nozzles
Exhaust manifold	Fuel pump
Intake manifold	Fuel filter
Water pump	Fuel lines
Ventilator	Air cleaner with intake silencer
Ventilator pulley	Oil filter
Fuel tank	Cylinder gasket
	Radiator
	Radiator cap
	Tank cap
	Exhaust muffler
	Exhaust pipe

2. POWER TRAIN

Including: Clutch, transmission, propeller shafts, differential, side shafts.

Excluding: Clutch facing, axle housing, wheels, rubber parts, brake system, hand and foot levers.

Clutch	Clutch
Clutch housing	Universal joints
Clutch lever	Propeller shaft
Transmission case	
Transmission case cover	
Main transmission pinion	
Secondary shaft	
Gears	
Synchroniser parts	

Components normally manufactured by automobile factories.	Components normally manufactured by ancillary factories.
--	---

2. POWER TRAIN (Contd.)

Splined shafts
 Shifting shafts
 Gear shift lever
 Shift fork
 Crown wheel and pinion
 Differential housing
 Differential gears
 Rear axle side shafts

3. CHASSIS FRAME WITH AXLES, WHEELS AND STEERING

Including: Axle housing, suspension springs, brake system, hand and foot levers.

Excluding: Brake linings, brake hoses, tyres and rubber parts.

Chassis frame (long and short
 members)
 Frame brackets
 Rear axle housing
 Front axle
 Wheel hubs
 Brake drums
 Brake shoes
 Brake shoe holder
 Brake drum covers
 Hand brake levers
 Foot brake levers
 Steering gear
 Steering column
 Steering arm
 Steering knuckle
 King pin

Disc wheels
 Cast wheels
 Wheel bolts and nuts
 Hub caps
 Suspension leaf springs
 Suspension coil springs
 Torsion bars
 Spring chassis
 Spring U bolts
 Spring centre bolts
 Spring shackle bolts
 Spring shackle pins
 Spring clips
 Spring bushes
 Shock absorbers
 Hydraulic brakes
 Vacuum servo brakes
 Compressed air brakes
 Brake cables
 Brake fluid
 Tie rods
 Steering wheel
 Ball and socket joints
 Bumpers

4. ELECTRIC EQUIPMENT

Including: Bulbs and switches.

Excluding: Rubber parts.

Dynamo
 Starter motor
 Battery
 Starter cables
 Ignition coil
 Distributor with interruptor
 Voltage regulator

Components normally manufactured
by automobile factories.

Components normally manufactured
by ancillary factories.

4. ELECTRIC EQUIPMENT (Contd.)

Ignition cables
Sparking plugs
Ignition switch
Head lamps
Tail lamps
Side lamps
Fog lamps
Spot lights
Stop lamps
Control lamps
Reversing lamps
Direction indicators
Flash switches
Switches
Stop lamp switches
Horns electrical
Horn buttons
Bulbs
Bulb sockets
Wind-shield wipers
Fuses
Fuse boxes
Wire harness

5. RUBBER-, ASBESTOS PARTS, GASKETS

Tyres
Tubes
Flaps
Tyre repair equipment
Fan belts
Oil seal rings
Rubber couplings
Rubber mounting pads
Rubber sections
Rubber hoses
Rubber bumpers
Rubber carpets
Fuel pump diaphragms
Fuel hoses
Brake hoses
Cylinder head gaskets
All kinds of other gaskets
(oil, paper, asbestos,
fibre, a.s.o.)
Brake linings
Clutch facings

Components normally manufactured
by automobile factories.

Components normally manufactured
by ancillary factories.

6. BODIES

Including: Truck cabs and platforms, instruments, seats, upholstery material, locks, trimming parts, safety glass, paints.

Excluding: Rubber and electrical parts.

Passenger car bodies
Bus bodies
Cabs
Truck bodies
Mudguards

Passenger car bodies
Bus bodies
Cabs
Truck bodies
Mudguards
Seats
Seat runners
Seat adjusters
Spring cases
Door locks
Foam rubber cover
Hinges
Wind screens
Windows
Safety glass laminated or toughened
Window regulators
Window guides
Ornamental fittings
Anti drum materials
Upholstery materials
Trimming sections
Rear view mirrors
Instrument panel
Ammeter
Speedometer
Flexible shafts for speedometer
Oil pressure gauge
Fuel gauge
Air pressure gauge
Thermometer
Number plates
Tipping gears
Door handles and others
Hairlock cover

7. SERVICE EQUIPMENT

Tool kits
Starter crank
Tyre mounting levers
Jacks
Hand tyre inflator
Air pressure gauges
Lubricating equipment
Towing cranes
Towing ropes and rods

APPENDIX VI

[Vide paragraph 7(1) (11)]

(A) Components of Hindustan Cars manufactured in the workshops of Hindustan Motors Limited, during the year 1950-51 and 1951-52.

a = All those parts which are manufactured from indigenous raw materials and machined at the factory of Hindustan Motors Ltd.

c = All those parts for which the raw materials, forgings or castings are imported and the machining is done in the factory of Hindustan Motors Ltd.

				1950-51	1951-52
c	1. CRANKSHAFT	..	..	5	2725
c	2. Nut	..	..	492	2838
a	3. Pulley	..	..	222	2960
c	4. CAMSHAFT	..	..	...	2735
c	5. Thrust plate	..	..	846	3173
c	6. Connecting rods	..	..	...	10137
c	7. Conn. rod cap bolt	..	..	5069	22466
a	8. CYLINDER BLOCKS	..	..	13	2905
a	9. Main bearing cap centre	..	..	Nil	3280
a	10. Main bearing cap rear	..	..	...	3389
a	11. Main bearing cap front	..	..	...	2981
c	12. Drain tube	..	..	1156	2278
c	13. Stud	..	..	3972	16297
c	14. Valve guide	..	..	4067	21556
a	15. Core plug	..	..	2550	6415
c	16. Dowel	..	..	4087	6074
a	17. Oil seal cover	..	..	996	3313
a	18. Water jacket cover	..	..	758	3194
a	19. Core plug	..	..	1334	3038
a	20. Sump	..	..	...	3453
a	21. CYLINDER HEAD	..	..	181	2701
a	22. Core plug	..	..	5250	10180
a	23. Water outlet pipe	..	..	1210	3461
c	24. INLET & EXHAUST MANIFOLD	..	..	255	2777
c	25. Clamp	..	..	1974	5820
	VALVES:				
c	26. Inlet valve	..	..	...	9673
c	27. Exhaust valve	..	..	...	11489
c	28. Valve spring collar	..	..	1020	20070
c	29. TAPPET (VALVE)	..	..	2194	22314
a	30. Tappet cover	..	..	1193	3080
a	31. FLYWHEEL	..	..	208	2593
c	32. Dowel	..	..	2048	3706

c	33. GUDGEON PINS	..	..	1950-51 47	1951-52 14332
c	34. WATER PUMP	..	..	238	2993
c	35. Spindle	..	..	1016	2147
a	36. Vane	..	..	460	2820
c	37. Spindle collar	..	..	859	3159
c	38. Bearing dist. tube	..	..	...	2710
a	39. Fan pulley hub	..	..	...	3746
TIMING COVERS:					
a	40. Timing gear case	..	..	865	3216
c	41. Front bearer plate	..	..	...	3001
TIMING GEARS:					
a	42. Crankshaft gear	..	..	...	3703
c	43. Camshaft gear	..	..	...	2961
SWIVEL PINS & FRONT SUSPENSION:					
c	44. Swivel pins R.H.	..	..	1898	2389
c	45. Swivel pins L.H.	..	..	1762	2134
c	46. Stub shaft R.H.	..	..	1362	2673
c	47. Stub shaft L.H.	..	..	1353	2666
c	48. Hollow dowel	..	..	9375	7884
c	49. Link-Swivel pin upper R.H.	..	..	973	2849
c	50. Link-Swivel pin upper L.H.	..	..	1209	2893
c	51. Link lower R.H.	..	..	1795	2804
c	52. Link lower L.H.	..	..	1805	3278
c	53. Steering lever R.H.	..	..	1575	3109
c	54. Steering lever L.H.	..	..	1578	2602
TRANSMISSION GEAR & GEAR BOX:					
a	55. Gear box	..	..	493	2941
c	56. Interlock pin	..	..	970	2725
c	57. Mainshaft	..	..	15	2989
c	58. Bearing guard	..	..	975	2748
c	59. Striking dog	..	..	388	2865
c	60. Sliding hub	..	..	763	5304
c	61. 3rd speed gear	..	..	70	2819
c	62. Lock plate	..	..	582	2812
c	63. 2nd speed gear	..	..	68	2573
c	64. Washer	..	..	1589	4716
c	65. 2nd speed gear lock washer	..	..	417	3553
c	66. 1st speed gear	..	..	476	2417
c	67. Main interceptor	..	..	2354	6951
c	68. Distance collar	..	..	1531	4188
c	69. Layshaft	..	..	819	2855
c	70. Roller washer	..	..	1844	5856
c	71. Roller spacer	..	..	915	3431
c	72. Bearing plate front	..	..	991	2506

			1950-51	1951-52
c	73. Bearing plate rear ..	..	
c	74. Layshaft gear unit ..	..	1080	2824
c	75. Locking screw ..	..	...	2714
c	76. Drive gear ..	..	1075	2276
c	77. Bearing nut ..	..	116	2765
c	78. Reverse gear ..	..	807	1135
c	79. Reverse gear shaft ..	..	422	2931
c	80. Shaft screw ..	..	...	3008
a	81. Gearbox cover ..	..	1046	3061
c	82. Striking fork ..	..	1012	3350
c	83. Striking fork ..	..	...	3020
c	84. Shifter fork ..	..	...	3198
c	85. Stop ..	..	421	2935
c	86. Shifter lever ..	..	804	1662
c	87. Pin ..	..	1040	2571
c	88. Swivel bolt ..	..	1029	3225
			1123	2770
c	89. Shifter shaft ..	..	378	2793
c	90. Shifter shaft ..	..	1160	2407
c	91. Shifter shaft reverse ..	..	469	2487
c	92. 1st & 2nd selector ..	..	1703	5402
c	93. Selector ..	..	1451	2723
c	94. Selector lever internal ..	..	1568	1807
c	95. Selector lever connecting link ..	..	2135	5008
c	96. Connecting link pin ..	..	1899	5573
c	97. Shifter lever ..	..	1174	2194
c	98. Selector cross shaft ..	..	1645	5618
c	99. Selector lever pin ..	..	870	3036
c	100. Selector lever external ..	..	1123	1928
c	101. Shifter lever reverse ..	..	903	2565
c	102. Shifter lever plunger ..	..	1025	2773
			258	3583
a	103. Gearbox extension ..	..	2395	10958
c	104. Gearbox dowel ..	..	
a	105. Gearbox side cover ..	..	...	4113
c	106. Gearbox side cover stud ..	..	938	3109
c	107. Drain valve spindle ..	..	1031	3390
c	108. Rear bearing collar ..	..	2660	9998
c	109. Speedo gear ..	..	691	4083
c	110. Speedo pinion ..	..	419	2902
c	111. Speedo pinion nut ..	..	1352	2552
c	112. Universal joint flange ..	..	378	3419
a	113. Clutch housing ..	..	259	4034
c	114. Clutch fork ..	..	1157	2217
c	115. Clutch fork shaft ..	..	1216	2383
c	116. Clutch lever ..	..	804	3299

			1950-51	1951-52
REAR AXLE:				
c 117.	Axle tube R.H.	.. ..	2148	2832
c 118.	Rear spring seat	.. ..	3337	4848
c 119.	Rear axle casing	.. ..	1347	2931
c 120.	Bearing support	.. ..	2895	5274
c 121.	Taper dowel	.. ..	34111	29003
c 122.	Axle tube L.H.	.. ..	1596	3495
c 123.	Cover	.. ..	1175	2695
c 124.	Grease plug	.. ..	3860	4637
c 125.	Dist. washer	.. ..	2280	2247
c 126.	Dist. piece	.. ..	1734	2467
c 127.	Universal joint flange	.. ..	1079	2750
c 128.	Washer castle nut	.. ..	1421	2671
c 129.	Pinion	.. ..	1692	2536
c 130.	Crown wheel	.. ..	1500	3112
c 131.	Diff. cage	.. ..	1253	2895
c 132.	Diff. pinion	.. ..	3158	4396
c 133.	Diff. gear	.. ..	3636	4670
c 134.	Diff. pinion pin	.. ..	2106	2253
c 135.	Locking bolt	.. ..	2150	2062
c 136.	Diff. dist. collar	.. ..	3256	5799
c 137.	Rear axle shaft	.. ..	2751	4847
c 138.	Dist. washer	.. ..	3824	5327
c 139.	Oil seal collar	.. ..	3623	4301
HUBS & BRAKE DRUMS:				
c 140.	Brake drum & hub (front)	.. ..	822	4301
c 141.	Stud	.. ..	9693	44896
c 142.	Bearing spacer	.. ..	3571	4112
c 143.	Nut for wheel stud	.. ..	29562	51887
c 144.	Brake drum & hub (rear)	.. ..	...	1218
c 145.	Distance washer hub	.. ..	3982	4565
c 146.	Washer	.. ..	5181	5068
c 147.	Brake plate support	.. ..	3201	5518
OIL PUMP:				
a 148.	Oil pump body	.. ..	67	2869
c 149.	Oil pump shaft	.. ..	482	2763
c 150.	Oil pump gear	.. ..	294	2779
c 151.	Oil pump gear	.. ..	90	3352
c 152.	Oil pump gear spindle	.. ..	963	2421
c 153.	Oil pump cover	.. ..	935	2557
a 154.	Oil pump gear and shaft	.. ..	...	2832
c 155.	Oil pump bush	.. ..	715	2414
c 156.	Oil pump shaft connection	.. ..	606	4017
c 157.	Oil pump shaft connection pin	.. ..	2390	5625
c 158.	Oil pump shaft	.. ..	480	2810
c 159.	Oil pump shaft sleeve	.. ..	2456	689

OIL FILTER:

1950-51 1951-52

c	160.	Oil relief valve body & filter cover	..	456	623
a	161.	Air cleaner pipe	..	...	2168
c	162.	Air cleaner disc. tube	..	691	2755

FRAME & BODY COMPONENTS:

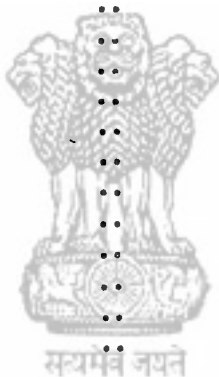
a	163.	Seat runners	..	535	3526
a	164.	Kick plates	..	...	5382
a	165.	Trimpad finishers	..	...	1333

ELECTRICAL COMPONENTS:

a	166.	Dynamo pulley	..	...	6943
c	167.	Starter bush button	..	...	3272
c	168.	Dynamo pivot collar	..	...	2930

GREY IRON CASTINGS CAST IN THEIR FOUNDRY.

a	169.	Cylinder blocks	..	...	133
a	170.	Crank shaft pulley	..	...	692
a	171.	Dynamo half pulley	..	...	324
a	172.	Fan pulley hub	..	...	583
a	173.	Water pump vane	..	...	252
a	174.	Oil pump cover	..	...	56
a	175.	Fly wheels	..	...	49
a	176.	Gear box cover	..	...	124
a	177.	Crankshaft gear	..	...	582
a	178.	Gear box	..	...	2
a	179.	Oil pump body	..	...	60
a	180.	Bearing cap front	..	...	250
a	181.	Bearing cap centre	..	...	8



APPENDIX VI (Contd.)

(B) Components of Studebaker trucks manufactured fully or partly in the workshops of Hindustan Motors Limited, during 1951-52.

			<u>1951-52</u>
a	1. Bumpers with towing hooks	...	1323
a	2. Number plate	...	1050
a	3. Fitment of robust rear cross member for towing attachment	...	1290
a	4. Rear pintle hook with spring draw bar and brackets	...	1
a	5. Brackets for carriage of two shovels	...	10
a	6. Cab	...	1

APPENDIX VI (Contd.)

(C) Further deletions from the next order for 1000 sets.

Finished components:

1. Pistons
2. Piston compression ring
3. Oil ring
4. Gear box filler plug
5. Mounting rubber support bracket
6. Buffer front grill bottom spacer
7. Front bumper
8. Rear bumper
9. Hair lock rear seat squab
10. Hair lock front seat squab
11. Front seat overley
12. Rear seat overley
13. Jack
14. Tyre pump & connection adapter
15. Arm rest pad
16. Block front door upper right hand
17. Block front door upper left hand
18. Moulding bonnet right hand
19. Moulding bonnet left hand
20. Bonnet hinges right hand
21. Bonnet hinges left hand
22. Moulding cover dust panel
23. Finisher dimister
24. Cable guide rear
25. Packing block motiff
26. Rear axle springs
27. Ornaments
28. Dynamo
29. Starter
30. Exhaust assembly
31. Front seat frame

Raw materials, such as castings, forgings, stampings for the following:

1. Gear box
2. Gear box cover
3. Cylinder block
4. Main bearing cap front
5. Main bearing cap centre
6. Main bearing cap rear
7. Valve guide inlet
8. Valve guide exhaust
9. Cylinder head
10. Crankshaft pulley
11. Crankshaft gear
12. Tappet
13. Oil pump body
14. Oil pump gear driver
15. Oil pump cover
16. Inlet & exhaust manifold
17. Water pump body
18. Water pump vane
19. Water pump spindle hub
20. Dynamo half pulley
21. Flywheel
22. Oil pump bush
23. Gear box extension
24. Gear box side cover
25. Clutch housing
26. Oil seal cover
27. Water jacket cover
28. Water outlet pipe
29. Tappet cover
30. Timing gear case
31. Oil sump
32. Air cleaner pipe
33. Water pipe
34. Striking fork top & 3rd
35. Striking fork 1st & 2nd
36. Mainshaft sliding hub 1st and 2nd
37. Selector lever external
38. Crankshaft
39. Inlet & exhaust manifold clamp
40. Bearing support
41. Universal joint flange clamp
42. Crownwheel hypoid
43. Rear axle shaft
44. Diff. gear
45. Brake plate support
46. Steering lever right hand
47. Steering lever left hand
48. Pinion 8/39 hypoid



49. Swivel pin right hand
50. Swivel pin left hand
51. Stud shaft right hand
52. Stud shaft left hand
53. Shifter fork reverse
54. Shifter fork stop
55. Mainshaft
56. Mainshaft striking dog
57. Mainshaft striking hub, top and 3rd
58. Mainshaft 2nd speed gear
59. Mainshaft 1st speed gear
60. Layshaft gear unit
61. Drive gear
62. Reverse gear
63. Selector 1st and 2nd
64. Selector top & 3rd
65. Selector lever internal
66. Selector lever connecting unit
67. Shifter lever internal
68. Shifter lever external
69. Universal jointing flange
70. Clutch fork
71. Connecting rod
72. Camshaft
73. Mainshaft 3rd speed gear

APPENDIX VI (Contd.)

(D) *Manufacturing programme of Hindustan Motors Ltd., Calcutta upto the end of 1954 — Components of Hindustan 14 cars.*

1. Trim pads
2. Waist rail finishers
3. Dust filler pads
4. Trim pads
5. Waist rail finishers
6. Propeller shaft
7. Lower arm rear
8. Extension lower arm - rear
9. Lower arm - front
10. Eye bolt
11. Distance tube, wishbone & swivel pin links
12. Thrust washer - wishbone & swivel pin links
13. Tie bar assembly
14. Tie rod front end
15. Bush tie bar frame
16. Rebound check bracket assembly
17. Pivot pin assy.
18. Rear washer pivot pin
19. Tab washer pivot pin
20. Shackle pins
21. Shackles
22. Bracket spring clamp

23. Frame pivot rear shock absorbers
24. Gear change control
25. Brake connections
26. Steering components
27. Lockhead master cylinder
28. Number plates
29. Sill finisher details
30. Sun visors
31. Engine mounting brackets
32. Brake assembly right hand
33. Brake assembly left hand
34. Brake plate assembly right hand
35. Brake plate assembly left hand
36. Bearing support
37. Pinion hypoid
38. Diff. gear
39. Crown wheel hypoid
40. Brake plate support
41. Swivel pin right hand
42. Swivel pin left hand
43. Stub shaft right hand
44. Stub shaft left hand
45. Steering lever right hand
46. Steering lever left hand
47. Piston
48. Front bearer plates
49. Connecting rod
50. Fan pulley
51. Crank shaft
52. Mainshaft striking dog
53. Drive gear (Stg. 152175)
54. Striking fork 1st & 2nd
55. 1st & 2nd reverse selector
56. Shift fork reverse
57. Shift lever extension
58. Mainshaft sliding hub 1st & 2nd
59. Mainshaft sliding hub top & 3rd
60. Universal joint flange
61. Layshaft gear unit
62. M/shaft 3rd speed gear



APPENDIX VI (Contd.)

(E) *Manufacturing programme of Hindustan Motors Ltd.,—Components of Studebaker cars and trucks.,*

1. Camshaft rear bearing plug
2. Camshaft timing gear cover oil collector ring
3. Camshaft timing gear cover
4. Camshaft
5. Camshaft timing gear
6. Camshaft timing gear thrust washer
7. Camshaft timing gear spacer
8. Water pump cover
9. Water pump cover assembly
10. Water pump body
11. Water pump bearing shaft & slinger assembly
12. Water pump & fan drive pulley hub assembly
13. Water pump & fan drive pulley hub
14. Water pump spindle
15. Water pump vane
16. Cylinder block
17. Main bearing cap (front)
18. Main bearing cap 2, 3 & 4
19. Main bearing cap (rear)
20. Core plug
21. Cylinder head
22. Cylinder head & valve guide assembly
23. Inlet valve guide
24. Exhaust valve guide
25. Water outlet pipe
26. Valve inlet
27. Valve EXH
28. Valve spring collar
29. Rocker arm assembly - complete
30. Rocker arm
31. Rocker shaft
32. Rocker shaft bracket
33. Valve cover
34. Tappet cover
35. Piston
36. Piston pin
37. Connecting rod assembly 1-3-5-7
38. Connecting rod assembly 2-4-6-8
39. Connecting rod
40. Connecting rod bolt
41. Crankshaft
42. Crankshaft timing gear
43. Crankshaft fan drive pulley
44. Crankshaft fan drive pulley hub
45. Crankshaft start jaw
46. Crankshaft oil thrower
47. Crankshaft thrust washer

48. Oil pump assembly - complete
49. Oil pump body & idler shaft assembly
50. Oil pump body
51. Oil pump driven gear & shaft assembly
52. Oil pump gear (driven)
53. Oil pump gear (idler)
54. Oil pump drive shaft
55. Oil pump cover
56. Oil pump idler shaft
57. Oil pan (sump)
58. Oil pressure relief valve
59. Flywheel assembly
60. Flywheel
61. Flywheel ring gear
62. Inlet manifold
63. Exhaust manifold - right hand
64. Exhaust manifold - left hand
65. Inlet manifold adaptor
66. Inlet manifold clamp
67. Distributor support assembly - complete
68. Distributor support
69. Distributor drive shaft assembly
70. Distributor drive shaft
71. Distributor drive shaft coupling
72. Distributor drive shaft gear
73. Fuel pump support
74. Clutch housing & release shaft assembly RH.D.
75. Clutch housing
76. Clutch release collar assembly
77. Clutch release collar
78. Clutch housing & busing assembly
79. Clutch release shaft assembly
80. Clutch release shaft - R.H.C.
81. Clutch release shaft retainer
82. Rear support bracket
83. Breather tube bracket
84. Valve lifter cover baffle
85. Crankshaft start jaw lock plate
86. Fuel pump push rod
87. Clutch release shaft lever
88. Gear box cover
89. Shifter shaft 1st & 2nd speed
90. Shifter shaft 3rd & 4th speed
91. Shifter shaft reverse
92. Inter lock pin
93. Selector arm 1st & 2nd speed
94. Selector arm 3rd & 4th speed
95. Selector arm reverse
96. Main shaft
97. 1st speed gear

98. 2nd speed gear
99. 3rd speed gear
100. Drive gear
101. Lay shaft gear
102. Gear box case
103. Speedometer gear
104. Speedometer pinion
105. Speedometer gear cover
106. Gear spacer 1st & 2nd speed
107. Gear spacer 3rd & 4th speed
108. Distance collar
109. Lay shaft
110. Lay shaft bearing spacer - front & rear
111. Drive gear shaft
112. Lock screw
113. Drive gear bearing nut
114. Reverse gear
115. Gear box side cover
116. Bearing retainer
117. Universal joint spider
118. Universal joint nut
119. Synchronizer 1st & 2nd speed
120. Synchronizer 3rd & 4th speed
121. Synchronizer blocking ring 1st & 2nd
122. Synchronizer blocking ring 3rd & 4th
123. Lay shaft thrust washer - front & rear
124. Reverse gear bush
125. Gear box cover stud
126. Drain plug
127. Rear flange
128. Rear flange bolt
129. Transmission baffle
130. Synchronizing sleeve 3rd & 4th
131. Reverse gear lock plate
132. Mainshaft oil slinger
133. Selector arm lock pin
134. Axle case left hand
135. Axle case rear hand
136. Axle case tube right hand
137. Axle case tube left hand
138. Rear spring support
139. Axle shaft
140. Differential housing
141. Bearing spacer
142. Differential gear
143. Differential pinion
144. Differential spider
145. Differential gear thrust washer
146. Differential gear pinion
147. Differential pinion thrust washer



148. Pinion bearing spacer
149. Pinion bearing nut
150. Universal Jt. flange
151. Pinion bearing housing
152. Pinion bearing stud
153. Crown wheel bolt
154. Hub bearing support Right hand
155. Hub bearing support Left hand
156. Crown wheel
157. Pinion
158. Brake drum
159. Brake plate; support
160. Brake drum cover
161. Filler plug
162. Drain plug
163. Bolt - housing to cover
164. Rear axle cover
165. Rear axle cover bolt
166. Shim
167. Differential bearing lap
168. Differential bearing lap bolt
169. Differential bearing adjusting nut left hand
170. Differential bearing adjusting nut right hand
171. Differential pinion bush
172. Differential cross shaft lock bolt
173. Thrust block
174. Speedometer pinion nut



APPENDIX VII

[Vide paragraph 7(2) (11)]

(A) List of components produced by Premier Automobiles Ltd., Bombay.

Name of assembly	Total quantity produced in 1950-51 and 1951-52
	Nos.
Assembly muffler	5,529
Assembly exhaust pipe	1,724
Muffler tail pipe	4,000
Muffler assembly for car	400
Assembly cab	2,350
Sheet metal assembly	2,350
Seat assembly	2,350
Lock assembly	6,400
Collapsible windshield assembly	600
Observation hatch assembly for cab	1,050
Fuel tank assembly	2,350
Aux. tank with bkts. & 3-way cock	2,350
Assembly radiator	2,840
Assembly front propeller shaft	1,857
Assembly rear propeller shaft	1,857
Assembly intermediate propeller shaft	600
Assembly front spring	3,286
Assembly rear spring	4,054
Assembly aux. rear spring	3,059
Assembly hand pump	1,766
Assembly screw jack	1,606
Assembly starting handle	2,327

Part Name

Underframe assembly	250
Floor assembly	"
Side and superstructure assembly	"
Front end assembly	"
Doors and lock assembly	"
Scotch skid pan assembly	"
Tail board assembly	"
Spare wheel carrier assembly	"
Carrier, -2-4½ gals. jerricans	"
Carrier, 1 gallon oil can	"
Plate number with bracket tail-light	"
Equipment box	"

PICK-UP VAN 108" WHEELBASE	Sets
Removable type canopy on pick-up	100
Assembly, canopy and seating arrangement	"
Step pick-up	"
Hook	"
Clip	"
Foot step for pick-up	"
Angle for foot step	"
Piece for bush for pin-hinge	"
Plate for cab	"
Angle bracket for cab	"
Chain for holding flap	"
Angle for lock on flap	"
Gusset for flap	"
Piece for flap	"
Angle for holding chain for holding flap	"
Angle for hinge	"
Chain for locking rod	"
Locking rod	"
Angle for lock on pillar	"
Pin hinge	"
Bush for pin hinge	"
Flap channel	"
Sheet for flap	"
Sheet rear end	"
Piece for close end	"
Sheet close end	"
Angle vertical side	"
Channel for side	"
Side	"
Side rear end	"
Side middle	"
Pillar closed end	"
Flat on floor	"
Angle floor frame end	"
Angle floor frame side	"
Floor planks	"
Cross channel	"



APPENDIX VII (Contd.)

(B) *Manufacturing programme of Premier Automobiles Ltd., Bombay upto the end of 1954.*

(a) *ENGINE ASSEMBLY* - divided into four groups:-

- 1st group : The toolings have been completed. Samples have been produced and majority of them have been approved by Chrysler Corporation and added to the Omission List. Approval of casting parts is yet awaited.
- 2nd group : Most of the toolings have been completed and samples are under production.
- 3rd group : Expected to be completed by August, 1953.
- 4th group : Expected to be completed by the beginning of 1954.

The whole engine assembly will be completed by the beginning of 1954.

(b) *TRANSMISSION ASSEMBLY* :-

Toolings for a number of components of transmission assembly are completed and for a number of other items of this assembly the tools are on hand. It is estimated that this will be completed by the end of 1953.

(c) *CHASSIS FRAME* :-

Out of 5 cross members required for a truck chassis, four were submitted for approval to the Chrysler Corporation in the U.S.A. and they have been duly approved for production. Trials on long members are in progress. Manganese carbon steel required for cross members and long members of the chassis are available to required specifications from Tatas.

(d) *DIFFERENTIAL ASSEMBLY* :-

As soon as the Engine and the Transmission programme are completed, it is proposed to take in hand the differential which it is estimated will be completed before the end of 1954.

(e) *FRONT AND REAR AXLE* :-

These also will be taken in hand in 1954 and will be completed during the same year.

(f) *WIRE HARNESS* :-

Sample has been produced.

(g) FRONT AND REAR SHOCK ABSORBERS
FOR CARS AND TRUCKS :-

All the toolings for the manufacture of Shock Absorbers have been completed. The first few samples produced have been inspected by the Production Inspection Department. The required number of samples have been air-freighted to the Chrysler Corporation for their engineering tests and approval. It is anticipated that their approval will be obtained in a short while after which regular production of Shock Absorbers will be started.



APPENDIX VIII

[Vide paragraph 7(3) (ii)]

Manufacturing programme of Automobile Products of India Ltd.,
Bombay upto the end of 1956.

		<u>Cumulative percentage</u>
1st year:	Manufacture of Trim, Carpets, mats, bodies, chassis assembly painting.	9%
2nd & 3rd years:	Petrol pipe sleeves and unions Clutch and brake pedals (forgings) Accelerator pedals (forgings) Exhaust pipe assemblies Exhaust pipe flange Tail pipe Starting handles Wheel braces Sun visors Rear wheel hubs (forgings) Front wheel hubs (castings) Steering knuckle pins Steering knuckle pin bushes Flywheels Ventilator lever handles Fan assembly (castings and stampings) Crankshaft pulley Starter dogs (castings) Rear axle drive couplings (forgings) Gear box drive couplings (forgings) Brake drums front (centrifugal castings) Brake drums rear (centrifugal castings)	33%
4th & 5th years:	Gear box castings Gear shift levers and controls Various control rods and shafts Hand brake and lever assemblies Battery cradles Cylinder blocks (castings) Valves (forgings) Valve guides (castings) Tappet blocks (castings) Tappets Piston rings (forgings)	66%
6th & 7th years:	Rear axle differential housings (castings) Rear axle differential carrier (castings) Rear axle shafts Rear axle banjo (forgings) Gear box main shafts (forgings) Gear box counters shaft clusters (forgings) Gear box sliding gears Gear box pinions	89%

APPENDIX IX
[Vide paragraph 7(4) (11)]

Manufacturing Programme of Standard Motor Products of India Ltd., Madras.

1st Batch: June 1953.

A. Engine Parts#

1. Exhaust manifold
2. Water pump body
3. Fan pulley extension
4. Water pump bearing housing
5. Dynamo pulley
6. Cylinder head
- 7.*Cylinder block

Complete machining of these parts will be undertaken by the firm from August, 1953, when machinery on order are expected.

B. Miscellaneous Parts

Silencer assembly, comprising:

1. Front exhaust pipe assembly
2. Washer to manifold
- Nut to manifold
- Exhaust silencer
- Tail exhaust pipe
- Clip
- Stiffener
- Dynamo adjusting link
- Dynamo bracket
- Starting handle
- Dunlopillo front seat frame



C. Trim material

1. Glove box, left hand side
2. Glove box, right hand side
3. Front door casing, right hand
4. Front door casing, left hand

-
- # (a) Local castings and machining of manifolds and cylinder heads for Fergusson Tractors will also be made from July, 1953.
- (b) The equipment for machining cylinder blocks is expected in May, 1953, and patters and core boxes for casting them locally in February, 1953.
- (c) Engines will be received in c.k.d. condition from June, 1953, and will be assembled completely by the firm.

Cylinder blocks will be imported as raw castings and machined by the firm. Local castings will be available for machining from December, 1953, from which date the firm will stop importing cylinder blocks.

C. Trim material (Contd.)

5. Centre pillar casing
6. Rear door casing, right hand
7. Rear door casing, left hand
8. Rear quarter casing, right hand
9. Rear quarter casing, left hand
10. Millboard rear tray
11. Armrest assembly, right
12. Armrest assembly, left
13. Aerial apperture cover without wireless
14. Sealing pad, rear door
15. Front door water channel
16. Trim pad, rear armrest, right hand
17. Trim pad, rear armrest, left hand
18. Felt strip (p.2 quality) 48" x 1½"
19. Sorbo trim pad, front door armrest
20. Cloth, upholstery @ 55"
21. Leathercloth V. 5, @ 50"
22. Leathercloth G.T.W.R. @ 50"
23. Headlining, rexine
24. Carpet, rubber backed @ 40"
25. Seat back material @ 55/56"
26. Fabrick, quality 'n' @ 50"
27. Rubber on felt, quality C.42, @ 60"
28. Needleloom felt, quality A.16 @ 60"
29. Canvas 3" lines @ 72"
30. Felt, quality G.M.P. @ 60"
31. Sheet wadding @ 36"
32. Flutwad, 2½"
33. Piping cord, code No. 5 N.S.
34. Piping cord, code No. 3 N.S.
35. Face felt S.M.T., quality @ 60"
36. Thin black felt 1½ wide strip
37. Thick black felt or 72" wide - 56" wide
38. Dunlopillo front cushion
39. Dunlopillo front squab
40. Dunlopillo front armrest front
41. Dunlopillo front armrest back
42. Dunlopillo rear cushion
43. Dunlopillo rear squab
44. Dunlopillo rear armrest front
45. Dunlopillo rear armrest back
46. Front seat base frame assembly
47. Front squab frame assembly
48. Front seat strut, right
49. Front seat strut, left
50. Front cushion trim frame assembly
51. Front squab trim frame assembly
52. Rear cushion frame
53. Rear squab frame assembly
54. Rubber mat, front right hand side complete with fasteners
55. Pedal mat, rubber
56. Dunlopillo seat frame parts
57. Side millboard, right hand - front seat

C. Trim material (Concl'd.)

- 58. Side millboard, left hand - front seat
- 59. Top back millroad - front seat
- 60. Bottom back millroad - front seat
- 61. Ash tray surround millroad, front
- 62. Armrest trim support - front seat

Second Batch : December, 1953.**A. Engine parts**

- 1. Fan blade assembly
- 2. Rocker cover assembly
- 3. Sump assembly
- 4. Timing cover
- 5. Crankshaft pulley
- 6. Front engine plate

- 7. Flywheels
 - 8. Brake drums
- } These items require iron having a phosphorous content of less than 0.15% and the firm's programme will depend on their getting suitable charcoal pig iron of the requisite quality.

9. Inlet manifold**B. Miscellaneous parts**

- 1. Petrol tank (comprising two parts and baffles)
- 2. Starting handle guide
- 3. Dipstick assembly (Eng.)
- 4. Dipstick assembly (Gear box)
- 5. Stabiliser bar

Third Batch: June, 1954.**A. Engine Parts**

- 1. Valve guides
- 2. Gudgeon pins
- 3. Pistons
- 4. Piston rings
- 5. Tappets

B. Miscellaneous Parts

- 1. King pins
- 2. Shackle pin front
- 3. Shackle pin rear
- 4. Spring clip
- 5. Hub cap
- 6. Locking plates
- 7. Wiring harness
- 8. Shock absorbers front
- 9. Electric horns
- 10. Rear axle banjo

Fourth Batch : December, 1954.**A. Engine parts**

- 1. Camshaft bearing (front)
- 2. Rear main bearing (cap)



A. Engine parts (Contd.)

3. Centre main bearing (cap)
4. Front main bearing (cap)
5. Camshaft
6. Rocker pedestal

B- Miscellaneous parts

1. Front springs
2. Rear springs
- Air cleaner support assembly comprising:
 3. tube cover piece rear
 4. tube cover piece front
 5. base rear
 6. base front
 7. tube rear
 8. tube front
 9. clip
 10. stay

Accelerator pedal details:

11. accelerator pedal bracket
12. clip for cable
13. tab
14. stem
15. washer
16. fulcrum bracket
17. pad
18. pedal

Hand break details:

19. pawl
20. spacer pad
21. washer
22. lever



Fifth Batch - June, 1955

A - Engine parts

1. Camshaft
2. Gear box housing
3. Gear box extension
4. Top cover (gear box)
5. Distributor adapter
6. Wet liner for cylinders

The fifth batch of manufacturing programme is subject to the machinery being received by February 1955.

B - Miscellaneous parts

1. Front bumpers
2. Rear bumpers
3. Outer tie rods
4. Centre tie rods
5. Tie rod lever

Subject to availability of steel tubing.

Rear brake compensator, details:

6. washer
7. screwed fulcrum

B. Miscellaneous parts (Contd.)

8. fulcrum assembly
9. lever
10. disc
11. compensator
12. rear brake rod, left hand
13. rear brake rod, right hand

Sixth Batch - December, 1955

A - Miscellaneous parts

1. Rear axles
2. Propeller shafts

Machined locally from
imported steel
Subject to availability
of local products.

3. Radiators
4. Front hubs

Seventh Batch - 1956-57 onwards

A - Miscellaneous parts

Gear box assembly with gears, comprising:

1. Reverses wheel assembly
2. Spindle
3. Countershaft gear
4. First speed gear on countershaft
5. Second speed gear on countershaft
6. Constant gear on countershaft
7. Countershaft
8. Mainshaft
9. First speed gear
10. Reverse gear on main shaft
11. Second speed gear assembly

These will be manufactured
from imported blanks
until such time as they
are available from local
sources.

Change speed details on steering, comprising: (x)

12. Latch piece
13. Tie bolt to latch
14. Pin to latch
15. Clamp piece
16. Selector lever bracket
17. Control rod
18. Selector lever
19. Half clamp - drilled
20. Half clamp - tapped
21. Top and second lever assembly
22. First and reverse assembly
23. Operating rod - top and second
24. Operating rod - first and reverse
25. Control shaft and gear assembly
26. Selector control shaft assembly
27. First and reverse lever assembly
28. First and reverse sub-assembly
29. Second and third lever assembly

(x) The manufacture of these
items is subject to the avail-
ability of suitable steel

A. Miscellaneous parts (Contd.)

- 30. Cross shaft assembly top and second
- 31. Cross shaft assembly first and reverse
- 32. Operating rods first and reverse
- 33. Operating rods top and second

Rear axle assembly, comprising:

- 34. Differential wheel (16 teeth)
- 35. Differential pinion (10 teeth)
- 36. Crownwheel and pinion

These will be machined from imported blanks until such time as they are available from local sources.



सत्यमेव जयते

APPENDIX X

[Vide paragraph 14(a)]

Existing rates of import duty on parts and accessories of motor vehicles under items Nos. 75(9), 75(10), 75(11) and 75(12) of the Indian Customs Tariff (thirty-sixth issue)

Item No.	Name of article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of			Duration of protective rates of duty
				The United Kingdom	A British Colony	Burma	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

75(9) The following articles and parts thereof, adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters: + ③

- (i) the following engine components: rubber mountings, hosepipes (other than fuel line hoses) with connections, fuel pump diaphragms, fan belts, mufflers, exhaust pipes and tail pipes;


- (ii) the following frame and body components carpets (made to size or shape), cushion springs, door and window fittings excluding glasses,

59 17/20
per cent
ad valorem

63 per
cent
ad valorem +

Prefer-
ential
Revenue



(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
75(9) Contd.	(ii) trim materials (leather, plastic, jute canvas and leather cloth), made to size or shape, bus bodies, station wagon bodies, truck bodies, steel cabs for lorries, pick up bodies and parcel van bodies; and (iii) the following other components: gaskets all sorts; rubber com- ponents not otherwise specified and horns not otherwise specified.	75(10) The following articles and parts thereof, adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters: * @		94½ per cent ad valorem	91 7/20 per cent ad valorem		
	(1) the following engine components: crank shafts, cam shafts, connecting rods, cylinder blocks and heads, manifolds, valves, valve springs, valve tappets, fly wheels, petrol tanks, radiators, fans, piston assembly (viz., pistons, piston rings and gudgeon						

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
75(10) Contd.	(1) pins, water pumps, timing gears and sprockets;						
	(ii) the following elec- trical components: lamps other than head lamps, wire harness, battery and other cables made to size and horns;						
	(iii) the following trans- mission and suspension components: front and rear springs other than coil springs, king pins, shackle pins, shock absorbers, spring hanger brackets, shackles, transmission gear and gear box, clutch housings, pro- peller shafts, uni- versal joints includ- ing needle bearings therefor, rear axle assembly (axle housing, axle shaft, ring gear pinion and carrier dif- ferential), front axles, hubs and brake drums and front sus- pension excluding coil springs;						



(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
75(10) Contd.	(iv) the following frame and body components: seat runners, short members of chassis frame and brackets; and						
	(v) the following other components: brake hose pipes, ball bearings up to 2" bore, bushings separately imported (excluding oil impregnated bushings) and bumpers.						
75(11)	The following articles and parts thereof, adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters, namely: #@	Prefer- ential Revenue	31½ per cent ad valorem	28 7/20 per cent ad valorem			
	(i) the following engine components: thin wall bearings, cylinder liners, carburettors, oil pumps, air cleaners, oil filters, fuel pumps, and fuel line hoses with connections;						
	(ii) the following electrical components: distributors, sparking plugs, direction indicators, electrical panel instruments, wind shield wipers,						

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
75(11) Contd.	<p>(ii) starting motors, generators, head lamps including sealed beams fuses, switches, ignition coils, and voltage and current regulators;</p> <p>(iii) the following transmission and suspensions components: steering mechanisms, pressed wheel clutches and suspension coil springs;</p> <p>(iv) the following frame and body components: toughened glass sheets, body panels including turret tops and sides for passenger cars and long members of chassis frames; and</p> <p>(v) the following other components: roller bearings, bushing (oil impregnated), panel instruments other than electrical, and brake cylinders.</p>	Preferential Revenue	31½ per cent ad valorem	28 7/20 per cent ad valorem			
75(12)	Articles other than rubber tyres, tubes, batteries and such other components as are specified in Item Nos. 75(9), 75(10) and 75(11) adapted for use as parts and accessories of motor vehicles, other than motor cycles and motor scooters. ⑨						



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Under Government of India, Ministry of Finance (Revenue Division), Notification No. 49-Customs, dated the 19th May, 1951 read with Section 5 of the Finance Act, 1951, articles adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters, specified in Item 75(9) if of the United Kingdom manufacture are exempt from so much of the customs duty leviable under the said Item as is indicated in the Schedule below:-

Provided that the said articles are not also adapted for use as parts and accessories of motor cars including taxi-cabs.

SCHEDULE

Item No.	Existing preferential rate	Reduced preferential rate
75(9)	57 per cent ad valorem, plus 5 per cent of the total duty.	52½ per cent ad valorem, plus 5 per cent of the total duty.

These are GATT items.

Under Government of India, Ministry of Finance (Revenue Division), Notification No. 49-Customs, dated the 19th May, 1951, articles adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters, specified in Items 75(10), 75(11) and 75(12) if of the United Kingdom manufacture are exempt from so much of the customs duty leviable under the said Items as is indicated in the Schedule below:-

Provided that the said articles are not also adapted for use as parts and accessories of motor cars, including taxi-cabs.

SCHEDULE

Item No.	Existing preferential rate	Reduced preferential rate
75(10)	87 per cent ad valorem plus 5 per cent of the total duty.	82½ per cent ad valorem plus 5 per cent of the total duty.
75(11)	27 per cent ad valorem plus 5 per cent of the total duty.	22½ per cent ad valorem plus 5 per cent of the total duty.
75(12)	27 per cent ad valorem plus 5 per cent of the total duty.	22½ per cent ad valorem plus 5 per cent of the total duty.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2. Premier (a) Autobodies Ltd.	C.i.f. value of average number of units annually sold during 1950-52	-	-	-	-	-	C.i.f. value of 300 units of Dodge cars on the basis of average c.i.f. price of 1952	C.i.f. value of 500 units of Dodge cars on the basis of 85 per cent of c.i.f. price of 1952	C.i.f. value of 500 units of Dodge cars on the basis of 70 per cent of c.i.f. price of 1952	C.i.f. value of 500 units of Dodge cars on the basis of 50 per cent of c.i.f. price of 1952	C.i.f. value of 500 units of Dodge cars on the basis of 50 per cent of c.i.f. price of 1952	C.i.f. value of 1000 units on the basis of average price of 1952	C.i.f. value of 2000 units on the basis of 85 per cent of c.i.f. price of 1952	C.i.f. value of 2000 units on the basis of 70 per cent of c.i.f. price of 1952	C.i.f. value of 2000 units on the basis of 50 per cent of c.i.f. price of 1952	C.i.f. value of 2000 units on the basis of 50 per cent of c.i.f. price of 1952	C.i.f. value of average number of units annually sold during 1950-52
(b)	- (a) -	-	-	-	-	-	As in (a) above	As in (a) above	C.i.f. value of 500 units of Dodge cars on the basis of 45 per cent of c.i.f. price of 1952	C.i.f. value of 500 units of Dodge cars on the basis of 25 per cent of c.i.f. price of 1952	&	As in (a) above	As in (a) above	C.i.f. value of 2000 units on the basis of 45 per cent of c.i.f. price of 1952	C.i.f. value of 2000 units on the basis of 25 per cent of c.i.f. price of 1952	C.i.f. value of 2000 units on the basis of 25 per cent of c.i.f. price of 1952	
3. Automobile (a) Products of India Ltd.	C.i.f. value of 500 units of Hillman Minx on the basis of average c.i.f. price of 1952	-	C.i.f. value of 1000 units of Hillman Minx on the basis of 85 per cent of c.i.f. price of 1952	C.i.f. value of 1750 units of Hillman Minx on the basis of 70 per cent of c.i.f. price of 1952	C.i.f. value of 2200 units of Hillman Minx on the basis of 50 per cent of c.i.f. price of 1952	C.i.f. value of 3500 units of Hillman Minx on the basis of 50 per cent of c.i.f. price of 1952	-	-	-	-	-	C.i.f. value of 250 units on the basis of average c.i.f. price in 1952	C.i.f. value of 500 units on the basis of 85 per cent of c.i.f. price in 1952	C.i.f. value of 950 units on the basis of 70 per cent of c.i.f. price in 1952	C.i.f. value of 1400 units on the basis of 50 per cent of c.i.f. price in 1952	C.i.f. value of 2000 units on the basis of 50 per cent of c.i.f. price in 1952	C.i.f. value of average number of units annually sold during 1950-52

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
3. Automobile Products of India Ltd. (Contd.).	—	As in (a) above	As in (a) above	As in (a) above	As in (a) above	&	—	—	—	—	—	As in (a) above	As in (a) above	As in (a) above	As in (a) above	&	—
1. Standard Motor Products of India Ltd.	—	C.i.f. value of 250 units of Standard Vanguard car on the basis of the 85 per cent of average c.i.f. price in 1952	500 units of Standard Vanguard car on the basis of the 85 per cent of average c.i.f. price in 1952	C.i.f. value of 1250 units of Vanguard car on the basis of the 70 per cent of c.i.f. price in 1952	C.i.f. value of 2000 units of Vanguard car on the basis of the 50 per cent of c.i.f. price in 1952	C.i.f. value of 3000 units of Vanguard car on the basis of the 50 per cent of c.i.f. price in 1952	—	—	—	—	—	—	—	—	—	—	C.i.f. value of average number of units annually sold in 1950-52
(b)	—	As in (a) above	As in (a) above	As in (a) above	As in (a) above	&	—	—	—	—	—	—	—	—	—	—	—
5. Ashok Motors Ltd.	—	As in the case of assemblers	As in the case of assemblers	As in (a) above	As in (a) above	As in (a) above	—	—	—	—	—	—	—	—	—	—	—
(a)	—	As in the case of assemblers	As in the case of assemblers	As in (a) above	As in (a) above	As in (a) above	—	—	—	—	—	—	—	—	—	—	—
(b)	—	As in the case of assemblers	As in the case of assemblers	As in (a) above	As in (a) above	As in (a) above	—	—	—	—	—	—	—	—	—	—	—



As in the case of assemblers.

(a) If programme of manufacture is fulfilled.

(b) If programme of manufacture is not fulfilled.

* Subject to further consideration after Ashok Motors' manufacturing programme has been examined by Government.

& To be fixed after review at the end of 1955.

Exclusive of requirements for the army.

PROPOSED IMPORT ARRANGEMENTS - ALLOCATION OF FOREIGN EXCHANGE

B - ASSEMBLERS

	PASSENGER CARS										COMMERCIAL VEHICLES			
	Baby cars		Light and medium cars				Big cars				Vans, light trucks and medium trucks		Heavy trucks and buses	
	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954	July 1953-June 1954
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
II. ASSEMBLERS														
6. Mahindra & Mahindra Ltd.	-	C.i.f. value of Jeeps required for the Army plus 400 units for civilian requirements.	As for July 1953 - June 1954				-	-	-	C.i.f. value of Jeep Vans required for the Army plus 100 units for civilian requirements.	As for July 1953 - June 1954		C.i.f. value of average number of units annually sold in 1950-52	
7. Dewar's Garage & Engineering Works.	-	-	-	-	-	-	-	-	-	C.i.f. value of 400 units of Land Rover Vans for civilian requirements.	As for July 1953 - June 1954		-db-	
8. General Motors India Ltd.,	-	25 per-cent of c.i.f. value of average number of units annually sold during 1950-52	12½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	6½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	6½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	25 per-cent of c.i.f. value of average number of units annually sold during 1950-52	12½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	12½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	12½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	25 per-cent of c.i.f. value of average number of units annually sold during 1950-52	6½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	6½ per-cent of c.i.f. value of average number of units annually sold during 1950-52	-db-	
9. Ford Motor Co. of India Ltd.	-	C.i.f. value of average number of units annually sold during 1950-52	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	
10. French Motor Car Co. Ltd.	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	
11. Addison & Co. Ltd.	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	
12. Pandurular Motor Corporation Ltd.	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	-db-	

APPENDIX XII

[Vide paragraph 19 (iv)]

COMPARATIVE COSTS OF PETROL AND DIESEL OPERATION, WITH AND WITHOUT THE ELEMENT OF DUTY (LOCAL AND CENTRAL) INVOLVED.

Sl. No.	Item	Comparative per bus mile costs incurred on the basis of the final cost of the materials involved.				Comparative per bus mile costs incurred on the basis of c.i.f. prices of the materials involved (i.e., disregarding the element of duty involved).				Saving in costs accruing from an all diesel operation.	
		'A'		'B'		'B'		Under 'A'		Under 'B'	
		For petrol operation	For Diesel operation	For petrol operation	For Diesel operation	For petrol operation	For Diesel operation	Pies.	Pies.	Pies.	Pies.
1.	Fuel	52.64	18.97	39.02	17.35				+ 43.67	+ 21.97	
2.	Spare parts	32.30	19.70	22.15	14.52				+ 12.60	+ 7.63	
3.	Interest @ 5% p.a. on the cost of :-										
	(a) Chassis	3.01	7.93	2.27	5.88				- 4.62	- 3.51	
	(b) Bodies	2.22	3.97	2.22	3.97				- 1.75	- 1.75	
4.	Depreciation :-										
	(a) Chassis	19.59	23.48	13.43	17.42				- 3.89	- 3.89	
	(b) Bodies	13.13	11.75	13.13	11.75				+ 1.98	+ 1.98	
	Batteries	0.99	4.24	0.99	4.24				- 3.25	- 3.25	
5.											
	TOTAL	134.18	90.04	93.21	75.23				+ 44.14	+ 17.98	

average operation of Dodge and Studebaker petrol-driven vehicles being fitted with Perkins P5 engine.



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